

CA1
DA
-R23

GOVT



Digitized by the Internet Archive
in 2022 with funding from
University of Toronto

<https://archive.org/details/31761115533911>

Gov.Doc
Can
Ag

Canada - Agriculture, Dept. of

(2)

CAI

DA
-R23

Forward..... Prairie Farm Rehabilitation Act and Program.....
The P.F.R.A. Test Rehabilitation Program.....

Details of Planning Section Operations
in 1941-42

Details of Operating Section

7th

REPORT ON ACTIVITIES

CONDUCTED UNDER THE

PRAIRIE FARM REHABILITATION ACT

FOR THE FISCAL YEAR ENDING MARCH 31, 1942

1941/42

DEPARTMENT OF AGRICULTURE

OTTAWA, CANADA.

| | |
|--|----|
| Relocation of Farmers Moved from Unproductive Land..... | 1 |
| Wool Marketing in 1941-42..... | 2 |
| Other Strategic Materials..... | 10 |
| The P.F.R.A. Test Rehabilitation Program..... | 10 |
| Small Farms and the P.F.R.A. Rehabilitation..... | 11 |
| Participative Type of Rural Rehabilitation Program..... | 17 |
| The Cultural Program Under the P.F.R.A. Rehabilitation..... | 26 |
| Progress of P.F.R.A. Cultural Work in 1941-42..... | 26 |
| Technical Experimental Farms..... | 27 |
| Agricultural Improvement Associations..... | 27 |
| Radiation Projects..... | 28 |
| Tree Planting..... | 28 |
| Field Crop Rehabilitation Department, Conditions Affecting Tree Planting..... | 28 |
| Historical References..... | 28 |
| Progressing..... | 28 |
| P.F.R.A. Progressing in 1941-42..... | 28 |
| Harvesting Started and Results..... | 28 |

A18201
10.12.43



TABLE OF CONTENTS

| | <u>Page</u> |
|--|-------------|
| Foreword..... | 1 |
| The Prairie Farm Rehabilitation Act and Program..... | 1 |
| The P.F.R.A. Land Utilization Program..... | 2 |
| Details of Community Pasture Operations in 1941-42..... | 2 |
| Details of Community Pastures..... | 3 |
| Financial Statement on Operations of Community Pastures..... | 4 |
| Progress Since 1937 in the Operation of Community Pastures..... | 6 |
| Regrassing Community Pastures..... | 8 |
| Fencing Community Pastures..... | 8 |
| Provision of Breeding Stock for Community Pastures..... | 8 |
| Grazing Fees on Community Pastures..... | 9 |
| Resettlement Under the P.F.R.A..... | 9 |
| Relocation of Farmers Moved from Community Pastures..... | 9 |
| Rolling Hills Irrigation Project..... | 9 |
| Other Irrigation Projects..... | 10 |
| The P.F.R.A. Water Development Program..... | 10 |
| Small Projects..... | 11 |
| Descriptive List of Large Water Development Projects..... | 17 |
| The Cultural Program Under the P.F.R.A..... | 26 |
| Progress of P.F.R.A. Cultural Work in 1941-42.... | 26 |
| Dominion Experimental Farms..... | 27 |
| Agricultural Improvement Associations..... | 27 |
| Reclamation Projects..... | 28 |
| Tree Planting..... | 28 |
| Field Crop Shelterbelt Experiments..... | 28 |
| Conditions Affecting Tree Planting in 1941.... | 31 |
| Historical Note..... | 31 |
| Regrassing..... | 31 |
| P.F.R.A. Regrassing in 1941..... | 33 |
| Harvesting Crested Wheat Grass in 1941..... | 33 |

Table of Contents (Continued)

| | |
|---|----|
| Methods of Regrassing..... | 33 |
| Seed Supplies for Regrassing Projects..... | 33 |
| Grazing Surveys and Grassland Research..... | 34 |
| Pasture Research Areas..... | 35 |
| Agricultural Development of Large Irrigation Projects..... | 35 |
| "Follow-up" Irrigation Program..... | 36 |
| Soil Surveys..... | 36 |
| Progress of Work on District Experiment Sub-Stations..... | 36 |
| Descriptive List of Substations..... | 37 |
| Control of Soil Drifting on Substations..... | 43 |
| Results of Soil Drifting Control Measures..... | 43 |
| Economic Research under the P.F.R.A. in Saskatchewan and Alberta..... | 46 |
| Financial Statement..... | 48 |
| Map showing Location of Community Pastures..... | 50 |
| Map showing Location of Large Water Development Projects..... | 51 |
| Map showing Location of Cultural Projects..... | 52 |

Report on Activities

Conducted under the

PRAIRIE FARM REHABILITATION ACT

for the Fiscal Year ending March 31, 1942.

Department of Agriculture
Ottawa, Canada.

F O R E W O R D

This report covers the seventh year of work conducted by the Dominion Department of Agriculture under the Prairie Farm Rehabilitation Act (P.F.R.A.). Activities in previous years have been outlined in the corresponding annual reports.

THE PRAIRIE FARM REHABILITATION ACT AND PROGRAM

The Prairie Farm Rehabilitation Act (25-26 George V C. 23) was passed by the Dominion Parliament in April 1935 "to provide for the rehabilitation of drought and soil drifting areas in the provinces of Manitoba, Saskatchewan and Alberta". Under the terms of this Act the Minister of Agriculture was authorized to introduce throughout the affected area those "systems of farm practice, tree culture, and water supply that will afford greater economic security" to prairie farmers. By an amendment to this Act in March, 1937 "land utilization and land settlement" were included as additional objectives. An amendment in March 1939 removed the original five-year currency of the Act, and an amendment in June 1941 clarified the authority of the Minister under the Act. The original Act and subsequent amendments were embodied in the Office Consolidation of the Prairie Farm Rehabilitation Act of 1941.

The area coming under the provisions of the P.F.R.A. was at first confined to the open plains of Western Canada, but this area has been successively enlarged to include the open plains and part of the park belt of the Prairie Provinces.

The rehabilitation program initiated by the P.F.R.A. has been developed to cover three main fields of work:

1. Land Utilization To adjust individual farm enterprises to the quality of land in such a manner as to assure a reasonable hope of adequate returns.
2. Water Development Through the conservation of surface run-off waters to provide necessary water supplies for farm use and wherever feasible for irrigation.
3. Cultural To promote improved methods of farming especially as regards the control of soil drifting and the production of crops under dry-land conditions.

The initial development of the P.F.R.A. program was affected through the facilities of the Experimental Farms Service of the Dominion Department of Agriculture. As the program expanded a separate Prairie Farm Rehabilitation administration was set up at Regina, Saskatchewan, to direct the work of Land Utilization and Water Development, while the Experimental Farms continued to promote the "Cultural" program.

THE P.F.R.A. LAND UTILIZATION PROGRAM

In practice, the Land Utilization program has been largely directed to the permanent removal of submarginal land from cultivation and the use of such land for grazing purposes in Community Pastures. Farmers who were originally settled in areas now included in Community Pastures have been assisted to relocate on better land elsewhere or have been settled on irrigation projects which have been developed under the Water Development program.

The Community Pasture program has resulted in appreciable benefits to prairie agriculture. By the end of March, 1942, there were 55 P.F.R.A. pastures in operation covering in the aggregate

944,460 acres, while 9 pastures, covering 270,320 acres were ready for use or under construction. By this means some 1,214,780 acres of submarginal land have been removed from unprofitable cultivation, actual or potential, and future possible economic losses to both individuals and governments which result from such cultivation will be avoided. Furthermore, the operation of these pastures under government supervision has already provided improved grazing facilities for farmers who had formerly inadequate pasturage for their livestock. For the most part these pastures, with an average of about 22,000 acres each, are located near areas of good crop land. Each pasture has been fenced, supplied with watering facilities, regrassed where necessary, and is under the care of a government appointed pasture manager.

In addition to the pastures mentioned above there are 79 areas, covering approximately 2,100,000 acres, on which the establishment of Community Pastures is under consideration. Thus, this phase of the P.F.R.A. program may eventually affect about three and one-third million acres of submarginal land.

So far, the work on Community Pastures has been confined to the provinces of Manitoba and Saskatchewan. In Alberta a somewhat similar program of removing submarginal land from cultivation has been in progress for a number of years through the activities of the Provincial Special Municipal Areas Board. Some measure of P.F.R.A. assistance has been given to this board in improving grazing and stockwatering conditions on submarginal areas.

DETAILS OF COMMUNITY PASTURE OPERATIONS FOR THE FISCAL YEAR 1941-42.

Some of the more important details of P.F.R.A. Community Pasture operations during the fiscal year ending March 31, 1942, are presented in Tables 1 and 2. Table 1 indicates the name, location, acreage and cost of construction of each pasture, as well as the number of cattle and horses carried in 1941 and the number of years which each pasture has been in operation. Table 2 presents financial details of the pastures shown in Table 1.

At this point it may be of interest to note the practice used in naming Community Pastures. In general, a pasture is named from the Rural Municipality in which it is located. Thus the Coalfields pastures are located on two separate areas in the Rural Municipality of Coalfields, Saskatchewan, and are numbered 1 and 2, respectively. The Estevan-Cambria pasture is located partly in each of two municipalities. Where pastures are located in unorganized territory, however, local place names are used, as with the Battle Creek, Nashlyn and Govenlock pastures. The Val Marie pasture is conducted in connection with the P.F.R.A. irrigation project at Val Marie, Saskatchewan.

In Tables 1 and 2 the Community Pastures in Saskatchewan are arranged in order of the number of the Rural Municipality in which they are located.

The location of P.F.R.A. Community Pastures is shown on a map on page 49.

TABLE 1. Details of P.F.R.A. Community Pastures
as of March 31, 1942.

| Name and Headquarters of Pasture | No. of R.M. | Acres in Pasture | Cost of Construction To March 31, 1942 | Livestock Carried in 1941 | | No. of Years pasture in operation |
|----------------------------------|-------------|------------------|--|---------------------------|--------|-----------------------------------|
| | | | | Cattle | Horses | |
| \$ | | | | | | |
| Saskatchewan | | | | | | |
| Coalfields 1 & 2 | | | | | | |
| Bienfait | 4 | 9,300 | 13,982.51 | 275 | 63 | 4 |
| Estevan-Camibia, Estevan | 5-6 | 6,880 | 9,877.46 | 178 | 75 | 4 |
| Masefield, Masefield | 17 | 20,960 | 28,612.20 | -- | -- | 0 |
| Lone Tree, Bracken | 18 | 32,960 | 21,929.30 | -- | -- | 0 |
| Battle Creek, 1 & 2 | | | | | | |
| Vidora | 20 | 67,640 | 63,659.07 | 1,557 | 242 | 3 |
| Nashlyn, Nashlyn | 21 | 62,240 | 38,787.22 | 1,993 | 228 | 3 |
| Govenlock, Govenlock | 22 | 44,720 | 29,953.73 | 1,017 | 49 | 3 |
| Lomond 1, 2 and 3 | | | | | | |
| Goodwater | 37 | 52,320 | 68,400.69 | 606 | 329 | 2 |
| Laurier, Radville | 38 | 24,000 | 25,050.13 | 589 | 201 | 4 |
| The Gap 1 & 2, Ceylon | 39 | 11,840 | 22,173.30 | 472 | 171 | 4 |
| Val Marie, Val Marie | 47 | 53,280 | 113,729.14 | 2,361 | 352 | 2 |
| Val Marie Extension | 47 | 101,440 | 50,000.00 | -- | -- | 0 |
| Beaver Valley | 47-A | 11,360 | 13,101.73 | 175 | 110 | 2 |
| Reno No. 1 Robsart | 51 | 16,480 | 32,010.79 | 492 | 163 | 2 |
| Reno No. 2 Robsart | 51 | 10,320 | | 334 | 16 | 2 |
| Brokenshell No. 1 | | | | | | |
| Trossachs | 68 | 21,600 | 18,259.84 | 628 | 351 | 4 |
| Brokenshell No. 2 | | | | | | |
| Trossachs | 68 | 8,800 | 10,206.88 | 388 | 70 | 4 |
| Key West, Ogema | 70 | 9,920 | 14,782.85 | 920 | 351 | 4 |
| Excel 1 & 2, Ormiston | 71 | 15,840 | 18,544.03 | | | 4 |
| Auvergne-Wise Creek | | | | | | |
| Cadillac | 77 | 27,520 | 37,302.52 | 864 | 378 | 2 |
| Shamrock, Shamrock | 134 | 22,400 | 20,532.95 | -- | -- | 0 |
| Swift Current-Webb, Webb | 137 | 15,680 | 25,459.26 | 178 | 216 | 1 |
| Big Stick, Maple Creek | 141 | 18,720 | 16,544.98 | -- | -- | 0 |
| Spy Hill, Spy Hill | 152 | 20,000 | 18,546.35 | -- | -- | 0 |
| Elbow, Elbow | 223 | 29,120 | 36,552.63 | 805 | 324 | 2 |
| Beaver Hill 1 & 2 | | | | | | |
| Parkerview | 245 | 44,160 | 49,121.13 | -- | -- | 0 |
| Coteau, Birsay | 255 | 26,000 | 22,175.78 | 522 | 176 | 3 |
| Monet 1 & 2, Hughton | 257 | 46,360 | 62,120.94 | 808 | 382 | 3 |
| Newcombe 1 & 2, Glidden | 260 | 54,560 | 70,233.56 | 500 | 171 | 3 |
| Wreford 1 & 2, Nokomis | 280 | 12,320 | 20,493.94 | 503 | 258 | 4 |
| Rudy 1 & 2, Broderick | 284 | 14,240 | 24,821.19 | 547 | 358 | 4 |
| Hillsburgh, Brock | 289 | 12,640 | 24,686.98 | 450 | 368 | 3 |
| Kindersley-Elma | | | | | | |
| Kindersley | 290-291 | 22,680 | 62,093.62 | 420 | 371 | 3 |
| Usborne, Venn | 310 | 12,720 | 18,103.02 | 790 | 347 | 4 |
| Dundurn, Dundurn | 314 | 20,480 | 22,679.59 | 514 | 348 | 4 |
| Montrose, Donavon | 315 | 11,680 | 12,416.41 | 463 | 101 | 4 |
| Oakdale 1 & 2, Coleville | 320 | 20,320 | 23,328.95 | 481 | 351 | 3 |
| Wolverine, Wolverine | 340 | 12,960 | 14,803.89 | -- | -- | 0 |
| Mariposa 1, 2 & 3 | | | | | | |
| Kerrobert | 350 | 29,760 | 34,444.10 | 778 | 498 | 4 |
| Progress 1 & 2, Onward | 351 | 18,720 | 26,410.55 | 671 | 279 | 3 |
| Hearts Hill, Cactus Lake | 352 | 16,000 | 16,889.33 | 394 | 304 | 3 |
| Park Langham | 375 | 5,840 | 11,726.94 | 241 | 69 | 4 |
| Battle River & Cutknife, | | | | | | |
| Battleford | 438 | 31,040 | 45,776.22 | 873 | 329 | 3 |
| Paynton 1 & 2 Paynton | 470 | 20,960 | 27,044.79 | 509 | 276 | 1 |
| Manitoba (Sask) | | | | | | |
| Ellis-Archie No.1, Welwyn | | 62,720 | 80,091.23 | 716 | 325 | 2 |
| Ellis-Archie No.2, | | | | | | |
| Foxwarren, Man. | | | | | | |
| Wallace, Elkhorn, Man. | | 3,280 | 3,051.55 | 584 | 119 | 2 |
| Total | | 1,214,780 | 1,420,503.27 | 24,601 | 9,119 | |

TABLE 2 Financial Statement on Operation of P.F.R.A. Community Pastures to March 31, 1942.

| Operations During Fiscal Year Ending March 31, 1942. | | Operations Since Opening of Pasture to March 31, 1942. | |
|--|----------|--|-----------------------------|
| Revenue | Expend. | Surplus | Expend. |
| <u>Saskatchewan</u> | | | |
| <u>Goalfields</u> | 556.20 | 650.81 | 94.61 |
| Estevan | 589.90 | 672.16 | 82.26 |
| Maserfield | | 63.57 | 63.57 |
| Lone Tree | | 110.56 | 110.56 |
| Battle Creek | 3,253.71 | 1,601.22 | 7,863.37 |
| Nashlyn | 2,854.72 | 1,303.00 | 8,295.14 |
| Govenlock | 2,025.81 | 1,095.83 | 5,369.10 |
| Lomond | 2,129.56 | 1,309.00 | 3,250.08 |
| Laurier | 1,682.25 | 1,301.65 | 4,154.94 |
| The Gap | 1,274.00 | 1,241.35 | 3,566.23 |
| Val Marie | 4,342.24 | 3,019.75 | 5,263.72 |
| Val Marie Ext. | | 1,322.49 | 3,775.15 |
| Beaver Valley | 573.25 | 536.84 | 36.41 |
| Reno No. 1 | 1,184.10 | 993.45 | 290.65 |
| Reno No. 2 | 741.65 | 625.64 | 116.01 |
| Brookenshell 1 | 2,109.49 | 1,776.53 | 332.96 |
| Brookenshell 2 | 833.51 | 738.22 | 95.28 |
| Key West | | | Operated with Excel Pasture |
| Excel | 2,536.23 | 2,023.68 | 512.55 |
| Auvergne | 2,477.60 | 2,124.61 | 352.99 |
| Shamrock | | | Not in Operation in 1941 |
| Swift Current | 757.45 | 759.43 | 1.98 |
| Big Stick | | | Not in operation in 1941 |
| Spy Hill | | | Not in operation in 1941 |
| Elbow | 2,403.47 | 2,370.46 | 33.01 |
| Beaver Hills | 276.95 | 374.26 | 97.31 |
| Coteau | 1,410.05 | 1,056.94 | 353.11 |
| Monet | 2,533.55 | 2,090.49 | 443.06 |
| | | | 61.98 |

TABLE 2 Financial Statement on Operation of P.F.R.A. Community Pastures to March 31, 1942.
(Cont'd)

| | Operations During Fiscal Year Ending March 31, 1942 | | | Operations Since Opening of Pasture to March 31, 1942. | | |
|---------------|---|--------------------------|-----------|--|------------------|------------|
| | Revenue Ex. 1 | Surplus Ex. 2 | Def. | Revenue Ex. 1 | Surplus Ex. 2 | Def. |
| Newcombe | \$ 1,142.05 | 287.17 | 139.12 | 2,301.97 | 2,791.97 | 490.00 |
| Wreford | 1,576.00 | 1,073.22 | 3,517.68 | 2,515.26 | 507.49 | |
| Rudy | 1,711.90 | 1,124.41 | 586.42 | 3,438.48 | 2,267.59 | 171.01 |
| Hillsburgh | 1,582.02 | 1,339.85 | 243.20 | 3,289.36 | 2,268.28 | 20.99 |
| Kindersley | 1,908.53 | 1,045.36 | 863.20 | 4,309.25 | 4,497.02 | 1,812.23 |
| Usborne | 2,175.11 | 1,223.63 | 951.43 | 5,828.55 | 3,990.69 | 1,837.66 |
| Dundurn | 2,039.19 | 1,476.23 | 562.96 | 4,419.89 | 4,641.96 | 222.07 |
| Monrose | 1,197.60 | 1,389.47 | 191.87 | 2,742.74 | 4,030.15 | 1287.41 |
| Oakdale | 1,760.00 | 1,297.33 | 462.67 | 3,784.15 | 2,908.14 | 876.01 |
| Wolverine | | Not in operation in 1941 | | | | |
| Mariposa | 2,645.60 | 1,624.60 | 1,021.00 | 7,535.35 | 5,395.53 | 2,139.82 |
| Progress | 1,691.10 | 1,227.97 | 463.13 | 3,176.83 | 2,635.80 | 541.03 |
| Heart's Hill | 1,106.57 | 1,215.12 | | 106.55 | 2,665.73 | 16.07 |
| Park | 1,672.15 | 729.93 | | 57.78 | 2,157.44 | 2,481.02 |
| Battle River | 2,289.65 | 1,791.92 | 497.73 | 4,316.13 | 3,989.51 | 326.62 |
| Paynton | 1,610.40 | 1,358.92 | 251.48 | 1,610.40 | 1,407.67 | 202.73 |
| Manitoba | | | | | | |
| Ellice-Archie | 1.1,906.29 | 1,878.33 | 27.96 | 4,378.80 | 3,918.68 | 460.12 |
| | 2.1,421.75 | 1,371.74 | 50.01 | 2,769.30 | 2,563.06 | 206.24 |
| | | | | | | |
| Total | 64,988.64 | 50,498.45 | 15,435.80 | 945.61 | 136,649.08 | 117,029.63 |
| | | | | | | 23,462.48 |
| | | | | | | 3,943.03 |

Analysis of the information presented in Tables 1 and 2 will reveal the following main features of P.F.R.A. Community Pasture operations in 1941.

The total expenditure on the construction of all pastures by the end of March, 1942, covering 1,214,780 acres, amounted to \$1,420,503.27. Incidentally, this figure represents practically the entire cost of bringing the above acreage into pasture operation, only a few small additional expenditures being anticipated in the future. Thus, the average cost of establishing a community pasture has worked out at about \$1.17 per acre. In this connection, it may be pointed out that all pastures covered by Tables 1 and 2, were in full operation in 1942, excepting the Wolverine pasture of 12,960 acres.

Fifty-four community pastures in operation under P.F.R.A. control during 1941 covered 941,180 acres and provided grazing for 24,601 cattle and 9119 horses. One pasture, the Wallace pasture of 3280 acres in Manitoba, was operated by the local municipality. On the pastures under government control the average area per head of livestock carried in 1941 was 27.8 acres. Incidentally, this figure compares favourably with the average area utilized per head of 38.1 acres in 1940 and 53.1 acres in 1939. (See Page 7). The increasing utilization of P.F.R.A. community pasture reflects both greater use of the pastures by stock raisers and improved grazing arising from efficient pasture management.

In the operation of P.F.R.A. Community Pastures in 1941, total revenue amounted to \$64,988.64, and total expenditure to \$50,498.45 leaving a net surplus for the year of \$14,490.19. The latter figure includes operating expenditures for the Masefield and Lone Tree pastures of \$63.57 and \$110.56 respectively which were made in anticipation of the 1942 season, since these pastures were not in operation in 1941. Operating revenue of \$276.95 and expenditures of \$374.26 are also shown for the Beaver Hills pastures, which were not in operation in 1941. These transactions arose partly from the cutting and sale of wood from the pasture areas, and partly in anticipation of 1942 operations. Making adjustments for the foregoing exceptions brings the total revenue, strictly chargeable to 1941 grazing, to \$64,711.95, the expenditures to \$49,950.06, and the net surplus to \$14,761.63.

Eight pasture units were operated during 1941 at a loss. Of these, the Coalfield (9300 acres), Estevan (6880 acres), Montrose (11,680 acres), Heart's Hill (16,000 acres) and Park (5840 acres) pastures have proved to be too small for economical operation. Contemplated extensions of these units are expected to result in more favourable financial returns. The Swift Current-Webb Pasture (15,680 acres) has only been in operation for one year, so that the 1941 deficit of \$1.98 is of no great significance.

Progress since 1937 in the Operation of P.F.R.A. Community Pastures

Statistics relative to the rate of development and utilization of P.F.R.A. Community Pastures are presented in Table 3.

In Table 3 it will be observed that the bulk of community pasture acreage came into operation in the years 1938 and 1939. The subsequent reduction in the rate of development was partly due to wartime retrenchment and partly to the fact that the more readily available tracts of submarginal land were developed at the beginning of the program.

The numbers of livestock carried each year on community pastures has increased steadily. During 1938, only 3,227 head of livestock were carried on 189,800 acres, or one head per 57.0 acres. The following year 11,534 head were carried on 612,300

DEVELOPMENT AND OPERATION OF COMMUNITY PASTURES
UNDER THE PRAIRIE FARM REHABILITATION ACT

TABLE 3

| Fiscal Year | Number of Pastures in Operation | Area of Pastures in Operation Acres | Total Cost of Construction of Pastures in Operation | Livestock Carried on Pastures | Acres per head of Livestock | Cost of Operations | | | Operating Cost per Head to Gov't | Average Cost per Head to Farmer |
|-------------|---------------------------------|-------------------------------------|---|-------------------------------|-----------------------------|--------------------|-------------|-------------|----------------------------------|---------------------------------|
| | | | | | | Revenue | Expenditure | Net Surplus | | |
| 1938-39 | 14 | 189,800 | 165,995.03 | 3,227 | 57.0 | 6,339.92 | 10,185.52 | | 3,845.60 | 3.16 |
| 1939-40 | 26 | 612,300 | 663,471.25 | 11,534 | 53.1 | 21,632.71 | 20,945.84 | 686.87 | 1.79 | 1.81 |
| 1940-41 | 35 | 884,500 | 1,004,305.91 | 23,210 | 38.1 | 43,451.56 | 35,291.05 | 8,160.51 | 1.52 | 1.87 |
| 1941-42 | 38 | 937,900 | 1,187,360.92 | 33,720 | 27.8 | 64,711.69 | 49,950.06 | 14,761.63 | 1.48 | 1.92 |
| | | | | | | 136,135.88 | 116,372.47 | 23,609.01 | 3,845.60 | |

N.B. This table does not include data relative to the Wallace Community Pasture of 3,280 acres in Manitoba, which was constructed under the P.F.R.A. in 1939 at a cost of \$3,051.55, but has been operated entirely by the Rural Municipality of Wallace, Manitoba.

acres, but the average of 53.1 acres per head was not much better than in 1938. Two reasons for these low numbers of livestock on pastures can be given: In the first place, the actual carrying capacity was somewhat low, as the various pasture improvement measures, such as regrassing and controlled grazing, had not yet exercised their full effect. Secondly, it took some time for farmers to realize the advantages offered by community pastures and in some cases to secure the livestock necessary to benefit thereby. Later these obstacles to the full utilization of community pastures became progressively less apparent, as the acreage grazed per head of livestock dropped to 38.1 acres in 1940 and 27.8 acres in 1941. Part of this improvement must be attributed to the increasingly attractive prospects for livestock production, arising from war conditions; but in a very considerable degree the credit is due to improvements effected in actual grazing conditions.

Steady improvement has also been effected in the fiscal aspects of pasture operation. In 1938 operations were conducted at a loss of \$3,845.60 for all pastures. In 1939 there was a surplus of \$686.87, of \$8,160.51 in 1940, and of \$14,761.63 in 1941.

As the level of grazing fees remained practically constant through 1939, 1940 and 1941, this progressive improvement in financial operations may be attributed to increasing carrying capacity, greater utilization, and improving management of pastures. The column in Table 3, entitled "Operating Cost per Head to Government" shows a progressive decrease from year to year, while the "Average Cost per Head to Farmers" remains nearly constant.

Several important findings have been made in connection with the development and management of P.F.R.A. Community Pastures. Experience has shown, for instance, that pastures in which less than from 15,000 to 20,000 acres can be supervised by one pasture manager are likely to be expensive in operation. This fact excludes smaller tracts of submarginal land from the community pasture program. Another finding is that it takes about two years to get an average pasture into economical operation. This factor, of course, operated with greater force in the pastures which were developed in the earlier period of the program.

Regrassing Community Pastures

With the object of improving grazing on community pastures, it has been the practice to regrass run-down or over-grazed areas as occasion arose and facilities permitted. Since the initiation of the pasture program in 1937 a total of 90,839 acres in community pastures have been regrassed at an average cost of \$0.88 per acre. Of the above acreage 27,308 acres were regrassed in 1941 at an average cost of \$0.61 per acre. A high degree of success has been secured in this work.

Fencing Community Pastures

By the end of March, 1942, the total length of fences erected around and in community pastures was 2533 miles. These fences are of a substantial nature, carrying four and five strands of barb wire, with creosoted fence-posts set at one-rod intervals. During 1941, 593 miles of fence were constructed on community pastures.

Provision of Breeding Stock for Community Pastures

Pure-bred bulls are provided by the P.F.R.A. administration for the various pastures on the following basis: For the first three years of pasture operation the necessary bulls are supplied free. For the second period of three years, a charge of one-half rental basis is made against the pasture revenues for each bull.

Thereafter, full rental charges are made. This rental is based on the average total cost of securing and maintaining a bull in service over a period of five years, and amounts at present to about \$35.00 per bull per year. By permanently keeping the selected breed of bulls on each pasture, it is hoped that the various pastures will eventually become centres of better bred livestock. As of March 31, 1942, there were 191 pure-bred bulls on community pasture service, including 101 Herefords, 82 Shorthorns and 8 Angus.

Grazing Fees on Community Pastures

The fees charged for grazing privileges on community pastures are based on estimated costs of operation and maintenance. The entire original cost of establishing pastures is borne by the government as a contribution to the improvement of land use conditions on the prairies. For this reason, it is possible to keep fees at a moderate level. During 1941 the monthly grazing fees ranged from 30 to 35 cents per head for cattle, from 40 to 50 cents for horses, while 5 cents was charged per sheep per month.

RESETTLEMENT UNDER THE P.F.R.A.

In general, agricultural settlement in Canada comes under provincial jurisdiction. For this reason, P.F.R.A. resettlement work has been largely limited to the relocation of farmers removed from community pastures, and to settlement on large P.F.R.A. irrigation projects. One exception occurred in 1936 when the P.F.R.A. organization co-operated with provincial authorities in transferring 63 farmers from dried-out areas in Saskatchewan to better locations elsewhere, by paying freight charges on effects and livestock.

Relocation of Farmers Moved from Community Pastures - In the development of community pastures, over 200 farmers have been moved to new locations, in some cases, with provincial assistance, to suitable holdings near the pastures, in other cases to new P.F.R.A. irrigation projects. As the latter method of resettlement presents certain interesting possibilities, a description at this point of agricultural settlement, the Rolling Hills Irrigation Project, one of the more important P.F.R.A. irrigation projects, may be in order.

Rolling Hills Irrigation Project - This project forms part of the Eastern Irrigation District. It possesses certain features which are highly desirable in an irrigated land settlement program. In the first place, it covers a solid block of some 25,000 acres of hitherto uncultivated land, the topography of which permits easy distribution of irrigation water. Secondly, both soil and climate are suitable for the economic production of irrigated crops. Thirdly, the necessary water storage and main canals for bringing adequate water supplies to the project are already in existence, having been constructed years ago by the C.P.R. Details of this construction will be found on page 24, under Water Development.

Development of the Rolling Hills project, specifically to provide for the resettlement of farmers moved from dried-out areas, was started in 1937 as a co-operative program between the Eastern Irrigation District and the P.F.R.A. organization. Under this arrangement, irrigable land is made available by the Eastern Irrigation District to settlers selected by the P.F.R.A. Land Utilization Branch. The District provides the main water supplies, constructs roads and assists in the introduction of various social services. Preparation of land for irrigation farming and supervision of settlement is undertaken by the P.F.R.A. Land Utilization Branch. Actual supervision of land preparation, and practical assistance to settlers in acquiring the necessary irrigation technique, as concerns the proper location and construction of field ditches for spreading and draining irrigation water, time

and rate of applying water and the selection of suitable crops, is provided by irrigation specialists from the Dominion Station at Lethbridge, Alberta.

Irrigable land in the Rolling Hills project is apportioned as follows: Allotments are confined to quarter sections. One quarter in each section is reserved for settlers from dried out areas in Alberta. The remaining three quarters are open for settlement to farmers removed from community pastures in Saskatchewan. Settlers are given a lease option for the first two years of occupancy, after which a sale contract may be offered by the District on advice from P.F.R.A. officials that the settler is likely to prove satisfactory. Sale price of the land is \$8.00 per irrigable acre. Settlers pay an annual water rate of \$1.60 per irrigated acre, plus 10 cents per acre for hail insurance. The foregoing conditions of sale and occupancy are designed to afford reasonable opportunity to eligible settlers and at the same time protect the project from undesirable exploitation.

Very promising results have attended the Rolling Hills development. By the summer of 1942 settlers had been placed on 180 quarter sections. In only three cases have settlers proved unsatisfactory. By 1942 a large proportion of the land in this project, which in 1937 was open range, was under irrigated crops, largely grain and alfalfa. The area is well adapted to the production of vegetables for canning. In 1942 over 3,000 acres were under peas for seed, the absence of the pea-weevil, destructive elsewhere, being a point in favour of this crop in the Rolling Hills area. Some 1,500 acres of peas were under contract for the production of seed for shipment to England.

Other Irrigation Projects - Other P.F.R.A. irrigation projects which offer settlement possibilities are located at Val Marie, Saskatchewan; Eastend, Saskatchewan; and Maple Creek, Saskatchewan. These projects, with an aggregate of 11,945 acres now under irrigation, and with room for some expansion, afford opportunity for the eventual settlement of over 200 farmers. In each of these projects, all of which are adjacent to extensive areas of range-land, the policy is adopted of disposing of irrigable land in small blocks of from 40 to 60 acres, with the object of promoting the production of forage crops as reserve or supplementary feed for range livestock. In 1941 there were 5 settlers operating under leases on the Val Marie project, 30 at Eastend, and 12 at Maple Creek. Increased settlement at these points is in progress.

A new irrigation project with considerable settlement capabilities is under construction at Swift Current, where storage and canal facilities are being developed to serve some 25,000 acres of dry lake and river bottom lands.

THE P.F.R.A. WATER DEVELOPMENT PROGRAM

The Water Development program initiated by the P.F.R.A. aims at increasing the supply of water for use on prairie farms by the greatest possible conservation of run-off. Hitherto, the optimum use of many tracts of land on the Canadian Prairies has not been possible because under the dry climate there were inadequate water supplies in some districts for domestic and stockwatering purposes. Under the P.F.R.A. engineering and financial assistance has been provided for individuals and communities to construct dugouts, dams or water diversion structures, for the conservation of run-off water from melting snow which would be otherwise lost through stream-flow. Provision can thus be made for year-round supplies for domestic and stockwatering uses, and for a limited amount of irrigation. In this manner, shortage of water on many prairie farms is overcome.

For purposes of administration, water development under the P.F.R.A. has been classified under "Small", "Community", and "Large" projects.

Small Projects - The small water development work of P.F.R.A. showed substantial recovery in 1941 from 1940 when construction was curtailed owing to limited funds available for new work. The volume of applications received from individuals for the assistance provided in storing surface water on farms and ranches for domestic stockwatering and irrigation increased steadily from some 1,832 applications in 1935 to over 10,600 in 1939. In 1940 the number of applications dropped to little over 3,300 when no new work could be approved, but increased to over 4,800 in 1941 when inspections were resumed.

Applications received during the seven year period ending March 31st, 1942, totalled 37,131 for the three provinces and included 25,491 dugouts; 8,407 stockwatering dams; and 3,233 individual irrigation projects. During this period 25,500 projects were surveyed and approved and over 17,564 were completed and paid for including 13,145 dugouts; 3,557 stockwatering dams; and 862 irrigation projects. Over 10 per cent of the applications received have been cancelled, rejected or abandoned.

During the fiscal year ending March 31, 1942, some 3,336 projects were paid for in the three provinces including 2,773 dugouts; 448 stockwatering dams; and 115 small irrigation projects.

Nearly two thirds, or 65.6 per cent of all applications received were from Saskatchewan; 20.3 per cent from Manitoba and 14.1 per cent were from Alberta. Dugouts made up 68 per cent of all applications varying from 31 per cent in Alberta to 69 per cent in Saskatchewan and 91 per cent in Manitoba. Twenty per cent of the applications were for stockwatering dams varying from slightly less than 8 per cent in Manitoba to nearly 23 per cent in Saskatchewan and 46 per cent in Alberta. Less than 9 per cent of the applications received during the seven year period were for irrigation varying from 23 per cent in Alberta to 8 per cent in Saskatchewan and less than 1 per cent in Manitoba.

The purpose of the P.F.R.A. small water development program is primarily to give assistance in providing water on individual farms. The plan of assistance is based essentially on the idea of self-help and individual initiative. However, in the excavation of dugouts where the water is stored below ground level, power equipment has been used extensively and much of the dugout work has been carried out as a community activity. In some areas contractors are employed, but mainly the municipalities have assisted by purchasing equipment and excavating dugouts for the individual ratepayers. Municipalities are able to give their ratepayers a dugout for a minimum charge in addition to assistance provided by P.F.R.A.

The introduction of large scale equipment on an extensive scale, including draglines and large wheel scrapers, has contributed largely to the success of the dugout program. Abundant water supplies have been made available in scores of municipalities and on many thousands of farms. As a consequence, these farms are better prepared for the increases in livestock made necessary by the war and the small water projects are to be regarded as one of the main contributions of P.F.R.A. toward the war effort insofar as agriculture on the prairies is concerned.

The procedure in setting up funds for small water development was changed during the year whereby individuals are required to send in notification that work has started before funds are allotted for payment of financial assistance. Funds may also be allotted for projects where definite arrangements have been made to have the work done by contract as in the case of municipal or

contractor equipment. This procedure eliminates all possibility of over expenditure and also ensures that funds are available for all projects for which commitments have been accepted. Financial assistance is payable only for projects inspected and approved prior to construction. However, all projects for which funds are allotted are not completed and to the extent that funds may be available from this residue, financial assistance may be recommended on a priority basis for projects completed either after funds are fully allotted or prior to inspection.

The policy with respect to small community projects where assistance is recommended on the basis of cost up to the authorized amount and based on the engineer's estimates, was suspended for the fiscal year. This was considered advisable in view of the large number of applications for individual projects and the limited funds available.

Community Projects - are similar to small projects but are constructed in the interest of rural municipalities or other public bodies for community use. The full cost of community projects is usually paid from P.F.R.A. sources.

Engineering service is furnished free to the extent that staff is available and financial aid approved by the Minister of Agriculture, and provides for dugouts, stockwatering dams and irrigation projects. Small water developments include (a) projects for individual use (b) neighbour projects where two or more farmers combine their water resources and (c) small community or municipal projects. Data respecting small water development and showing financial assistance paid are given in tables I, II, III and IV, on pages 13, 14, 15 and 16.

Large Projects - constructed under the P.F.R.A. include such works as large water storage reservoirs and extensive irrigation schemes. Here again the entire cost of production is usually defrayed from P.F.R.A. funds.

Work has been completed or is in progress on 67 large water development projects. These include the following:

1. Construction of 33 storage reservoirs, with a total capacity of 125,000 acre feet, designed to maintain stream-flow for stockwatering during dry periods.
2. Construction of 2 underground water storage projects.
3. Construction of 20 new irrigation projects covering 80,200 irrigable acres, supplied from storage reservoirs having a total capacity of 261,100 acre feet.
4. Extension of three old irrigation projects to irrigate an additional 32,850 acres.
5. Repairs to works in three older irrigation projects to enable them to continue operations.
6. Eight miscellaneous projects, including the exploratory sinking of a natural gas well to secure power for pumping water.

Most of the P.F.R.A. water development projects, both small and large, are designed to increase livestock carrying capacity on both farm land and range areas. At a modest estimate the irrigation projects alone should provide forage, supplementary to pasturage, sufficient to increase the carrying capacity of the prairies by the equivalent of over 300,000 head of cattle. Water storage projects provide sufficient water for several million head of cattle.

Table 4 presents information on the various large water development projects constructed or rehabilitated under the P.F.R.A. from the initiation of the program to the end of March, 1942. The location of these projects is shown on a map on page 50.

SMALL WATER DEVELOPMENT PROJECTS

for the Fiscal Year Ending March 31, 1942

| Type of Project and Province | Applications Received | | | | Projects Completed | | | |
|------------------------------|-----------------------|---------------|------------|------------|--------------------|---------------|------------|------------|
| | Dugouts | Stockwatering | Irrigation | Total | Dugouts | Stockwatering | Irrigation | Total |
| Individual | | | | | | | | |
| Manitoba | 303 | 34 | 5 | 342 | 468 | 5 | 1 | 474 |
| Saskatchewan | 3746 | 221 | 148 | 4105 | 2113 | 263 | 62 | 2438 |
| Alberta | <u>251</u> | <u>229</u> | <u>51</u> | <u>531</u> | <u>124</u> | <u>114</u> | <u>26</u> | <u>264</u> |
| TOTAL | 4290 | 484 | 204 | 4972 | 2705 | 382 | 89 | 3176 |
| Neighbour | | | | | | | | |
| Manitoba | 2 | 2 | - | 4 | - | 1 | - | 1 |
| Saskatchewan | 15 | 9 | 6 | 30 | 16 | 4 | 3 | 23 |
| Alberta | <u>2</u> | <u>-</u> | <u>2</u> | <u>4</u> | <u>-</u> | <u>-</u> | <u>2</u> | <u>2</u> |
| TOTAL | 19 | 11 | 8 | 38 | 16 | 5 | 5 | 26 |
| Community | | | | | | | | |
| Manitoba | - | 7 | - | -7 | - | - | - | - |
| Saskatchewan | 10 | 13 | 2 | 25 | 4 | - | - | 4 |
| Alberta | <u>1</u> | <u>-</u> | <u>-</u> | <u>1</u> | <u>-</u> | <u>-</u> | <u>-</u> | <u>1</u> |
| TOTAL | 11 | 20 | 2 | 33 | 5 | - | - | 5 |
| GRAND TOTAL | 4320 | 515 | 214 | 5043 | 2726 | 387 | 94 | 3207 |

SMALL WATER DEVELOPMENT PROJECTS

Number of projects and amount of financial assistance paid during fiscal year ending

March 31, 1942

Table II

| Province & Classification | DUGOUTS | | STOCKWATERING DAMS | | IRRIGATION SCHEMES | | TOTALS | |
|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------|
| | Number of Projects | Financial Assistance Paid | Number of Projects | Financial Assistance Paid | Number of Projects | Financial Assistance Paid | Number of Projects | Financial Assistance Paid |
| <u>Individual</u> | | | | | | | | |
| Manitoba | 483 | 55,511.76 | 9 | 847.10 | 1 | 299.31 | 493 | 56,658.17 |
| Saskatchewan | 2145 | 220,270.18 | 309 | 23,290.48 | 74 | 11,654.68 | 2528 | 255,215.34 |
| Alberta | 127 | 9,055.77 | 124 | 9,638.36 | 36 | 5,705.36 | 287 | 24,399.49 |
| <u>TOTAL</u> | 2755 | 284,837.71 | 442 | 33,775.94 | 111 | 17,659.35 | 3308 | 336,273.00 |
| <u>Neighbour</u> | | | | | | | | |
| Manitoba | - | - | 1 | 319.23 | - | - | 1 | 319.23 |
| Saskatchewan | 13 | 1,618.34 | 4 | 745.21 | 2 | 719.08 | 19 | 3,082.63 |
| Alberta | - | - | - | - | 2 | 608.73 | 2 | 608.73 |
| <u>TOTAL</u> | 13 | 1,618.34 | 5 | 1,064.44 | 4 | 1,327.81 | 22 | 4,010.59 |
| <u>Community</u> | | | | | | | | |
| Manitoba | - | - | - | - | - | - | - | - |
| Saskatchewan | 4 | 1,858.19 | 1 | 1,993.36 | - | - | 5 | 3,851.55 |
| Alberta | 1 | 496.70 | - | - | - | - | 1 | 496.70 |
| <u>TOTAL</u> | 5 | 2,354.89 | 1 | 1,993.36 | - | - | 6 | 4,348.25 |

SMALL WATER DEVELOPMENT PROJECTS

Table III

From Inauguration of Program to March 31, 1942

| Type of Project and Province | Applications Received | | | Projects Completed | | |
|------------------------------|-----------------------|--------------------|---------------------|--------------------|---------------|--------------------|
| | Dugouts | Stockwatering Dams | Irrigation Projects | Total | Dugouts | Stockwatering Dams |
| <u>Individual</u> | | | | | | |
| Manitoba | 6,798 | 533 | 50 | 7,381 | 5,121 | 266 |
| Saskatchewan | 17,062 | 5,540 | 1,992 | 24,594 | 7,558 | 2,853 |
| Alberta | 1,631 | 2,334 | 1,191 | 5,156 | 699 | 931 |
| TOTAL | 25,491 | 8,407 | 3,233 | 37,131 | 13,378 | 4,050 |
| <u>Neighbour</u> | | | | | | |
| Manitoba | 34 | 17 | 4 | 55 | 29 | 12 |
| Saskatchewan | 30 | 27 | 17 | 74 | 21 | 13 |
| Alberta | 2 | 2 | 7 | 11 | -- | -- |
| TOTAL | 66 | 46 | 28 | 140 | 50 | 25 |
| <u>Community</u> | | | | | | |
| Manitoba | 1 | 42 | -- | 43 | -- | 12 |
| Saskatchewan | 283 | 244 | 18 | 545 | 178 | 89 |
| Alberta | 10 | 47 | 27 | 84 | 6 | 31 |
| TOTAL | 294 | 333 | 45 | 672 | 184 | 133 |
| GRAND TOTAL | 25,851 | 8,786 | 3,306 | 37,943 | 13,612 | 4,207 |
| | | | | | 1,024 | 18,843 |

SMALL WATER DEVELOPMENT PROJECTS

showing number of projects and amount of financial assistance paid since the inauguration of program to March 31, 1942.

Table IV

| Province & Classification | DUGOUTS | | STOCKWATERING DAMS | | IRRIGATION SCHEMES | | TOTALS | |
|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|--------------------|---------------------------|
| | Number of Projects | Financial Assistance Paid |
| <u>Individual</u> | | | | | | | | |
| Manitoba | 5,053 | 491,969.56 | 263 | 19,381.81 | 14 | 2,479.77 | 5,330 | 513,831.14 |
| Saskatchewan | 7,415 | 741,247.61 | 2,401 | 192,065.71 | 568 | 88,462.99 | 10,384 | 1,021,776.31 |
| Alberta | 677 | 55,835.65 | 893 | 72,367.12 | 280 | 44,087.73 | 1,850 | 172,290.50 |
| TOTAL | 13,145 | 1,289,052.82 | 3,557 | 283,814.64 | 862 | 135,030.49 | 17,564 | 1,707,897.95 |
| <u>Neighbour</u> | | | | | | | | |
| Manitoba | 29 | 4,419.00 | 12 | 2,683.49 | 4 | 1,060.15 | 45 | 8,162.64 |
| Saskatchewan | 18 | 2,479.94 | 13 | 2,649.22 | 10 | 3,801.70 | 41 | 8,930.86 |
| Alberta | -- | -- | -- | -- | 3 | 1,108.73 | 3 | 1,108.73 |
| TOTAL | 47 | 6,898.94 | 35 | 5,332.71 | 17 | 5,970.58 | 89 | 18,202.23 |
| <u>Community</u> | | | | | | | | |
| Manitoba | -- | -- | 12 | 16,765.94 | -- | -- | 12 | 16,765.94 |
| Saskatchewan | 178 | 117,497.35 | 89 | 85,940.47 | 2 | 1,657.69 | 270 | 205,095.51 |
| Alberta | 6 | 2,843.05 | 31 | 25,019.51 | 10 | 9,383.19 | 47 | 37,245.75 |
| TOTAL | 184 | 120,340.40 | 132 | 127,725.92 | 12 | 11,040.88 | 329 | 259,107.20 |
| GRAND TOTAL | 13,376 | 1,416,292.16 | 3,714 | 416,873.27 | 891 | 152,041.95 | 17,981 | 1,985,207.38 |

TABLE 4 - LARGE P.F.R.A. WATER DEVELOPMENT PROJECTS CONSTRUCTED OR UNDER CONSTRUCTION IN MANITOBA

AS OF MARCH 31, 1942

| Project | Location | Description of Project | In irrigable Area Acres | Storage Capacity Ac.-Feet | Cost of Con- struction Purchase of Land |
|---|--|--|-------------------------------|---------------------------------|--|
| <u>Souris River Development in Manitoba</u> | | | | | |
| (a) Souris Dam | Town of Souris | Reconstruction of old dam, built in 1911. For stockwatering and domestic use. Repaired by P.F.R.A. in 1935 | 150 | 3,841.00 | |
| (b) Melita Dam No. 1 | 8-4-26-1 | Concrete Stockwatering dams on Souris River constructed in 1937. | 780) | 11,227.44 | |
| (c) Melita Dam No. 2 | 33-2-27-1 | | 480) | | |
| (d) Napinka Dam | 8-5-25-1 | Stockwatering dam on Souris River | 1,000 | 6,709.55 | |
| (e) Mawanesa Dam | 26-7-17-1 | Stockwatering dam on Souris River. Completed in 1940. | 320 | 15,457.25 | |
| (f) Hartney Dam | Hartney | Concrete stockwatering dam on Souris River. Completed in 1941. | 220 | 10,224.35 | |
| <u>Miscellaneous Projects in Manitoba</u> | | | | | |
| LaSalle River Storage Dams | River Lot 64 22-8-1-EPM 29-8-1-EPM | Three concrete dams on LaSalle River for stockwatering. Completed in 1941. | 900 | 22,738.68 | |
| Dead Horse Creek Dam | Morden | Earthfill dam with spillway for stockwatering. | 1,200 | 47,705.85 | |
| Brandon Dam | Brandon | Concrete dam on Assiniboine River. Built by Province of Manitoba with P.F.R.A. Assistance of \$3,996.45. Completed, 1941 | | | |
| Carman | Carman | Two concrete dams on Morris River | 500 | 3,996.45 | |
| Rock Lake Community Projects | 7-3-12-1 | 17 stockwatering dams and 1 diversion dam | 600 | 17,016.00 | |
| | | Total for Manitoba | 350 | 36,262.88 | |
| | | | 6,500 | 175,179.45 | |

LARGE P.F.R.A. WATER DEVELOPMENT PROJECTS CONSTRUCTED OR UNDER CONSTRUCTION IN SASKATCHEWAN E.S. OF MARCH 31, 1942

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity Ac.-Feet | Cost of Construction and purchase of land |
|----------------------------------|-----------------------------------|---|-------------------------|------------------------------|--|
| <u>Cypress Hills Development</u> | | | | | |
| <u>I Cypress Lake Projects</u> | | | | | |
| (a) Cypress Lake Storage | | | | | |
| (b) Val Marie Irrigation | Tps. 3 & 4, R.13 & Tp. 41 R.14W.3 | This includes a series of stockwatering and irrigation projects utilizing run-off from the Cypress Hills in Southwestern Saskatchewan and projects listed under Alberta. Includes the Bullshad Creek and Seven Persons Series of Developments on Cypress Lake and Frenchman River. Dams at east and west ends of Cypress Lake to raise level of water about 14 feet. Lake Receives run-off from various streams and empties into Frenchman River. | 80,000 | 427,317.35 | |
| (c) West Val Marie | 12-5-15-3 | Storage dam on Frenchman River for irrigation of river flats. Completed in 1937. In operation since 1938. Reserve water from Cypress Lake | 6,049 | 6,000 | 214,142.19 |
| (d) Eastend | 25-6-22-3 | Dam, spillway and pumping plant above Val Marie project on Frenchman River. Completed 1941 except for pumping equipment. Partly dependent on Cypress Lake. | 3,416 | 2,000 | 150,639.28 |
| (e) Robsart-Vidora | Tp. 4 & 5 W.3 | Dam for irrigation of bottom lands on Frenchman River. Operating since 1938. Dependent on Cypress Lake | 5,396 | 1,300 | 160,660.06 |
| | | Irrigation made possible by water in 4 mile outlet canal from Cypress Lake | 3,000 | | Under Cypress Lake |

SASKATCHEWAN (Cont'd)

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity Ac.-Feet | Cost of Construction and Purchase of Land |
|---|---------------------|---|----------------------|---------------------------|---|
| <u>Cypress Hills Development</u> | | | | | |
| II Maple Creek Irrigation Projects | | Development of streams flowing north from Cypress Hills. Vicinity of Maple Creek. | | | |
| (a) Downie Lake Reservoir | 1-9-28-3 | Earthfill dam and diversion works for irrigation along Maple Creek and Gat Creek Project completed in 1938. | 5,100 | 10,000 | 134,232.17 |
| (b) Junction Reservoir | 5-12-26-3 | Earthfill dam and reservoir for irrigation in Maple Creek project. Completed in 1939. | 10,000 | 52,397.79 | |
| (c) Tenaille Lake | 20-13-26-3 | Diversion canals and dykes to store water from Maple Creek | 3,260 | 20,800.85 | |
| (d) Maple Creek Flats Irrigation | Town of Maple Creek | Laterals and land levelling for irrigation. | 3,000 | 110,743.13 | |
| <u>III Swift Current Irrigation Project</u> | | | | | |
| (a) Duncairn Storage Dam | 34-13-15-3 | Development of Swift Current Creek and other streams of about 25,000 acres of river and lake flats. Part of water supply from Cypress Hills. Total cost estimated at \$1,500,000.00. Earthfill dam on Swift Current Creek to store water for irrigation. In progress. | 25,000 | 85,000 | 160,555.00-X |
| (b) Highfield Dam | 36-15-11-3 | Earthfill dam on Rush Lake Creek to store water for irrigation. In progress. | 25,000 | 80,000.00 X | |
| (c) Lac Pelletier Dam | 24-12-15-3 | Earthfill dam on Pelletier Creek storing water in Lac Pelletier, completed in 1937 | 3,350 | 2,139.08 | |
| X | Estimated | | | | |

SASKATCHEWAN (Cont'd)

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity Ac.-feet | Cost of Construction and Purchase of Land \$ |
|---|-----------|---|----------------------|---------------------------|--|
| (d) Swift Current Irr. Canals and Ditches | | In progress of construction | | | |
| <u>Cypress Hills Development</u> | | | | | |
| IV Adams Lake Dam | 14-8-29-3 | Storage Dam on Battle Creek for Stockwatering and Irrigation. Completed 1936. Water from Cypress Hills | 1,500 | 2,000 | 8,831.07 |
| V Middle Creek Dam | 21-4-30-3 | Storage dam on Middle Creek for stockwatering and irrigation. Completed 1937. Water from Cypress Hills. | 1,000 | 20,000 | 18,661.27 |
| <u>Souris River Development</u> | | | | | |
| (a) Weyburn Storage | Weyburn | Dams and works for storage and irrigation at various points on the Souris River in Saskatchewan. Dam and works to provide water supply for Weyburn and district. Completed in 1940. | | | |
| (b) Estevan Flood | | Canals and dykes to irrigate Souris River Flats above Estevan. Completed in 1937. | | | |
| (c) Roughbark Creek Dam | 29-6-13-2 | Earthfill dam to serve Estevan Irrigation Project. Completed in 1937 | 3,900 | | 91,012.73 |
| (d) Dead Lake Storage | 8-4-11-2 | Dam on Souris River to serve Estevan Irrigation Project. Completed in 1937 | | 1,500 | 9,314.93 |
| (e) Oxbow Dam | 14-3-2-2 | Stockwatering dam on Souris River. Completed in 1938 | | 2,600 | 14,615.98 |
| (f) Long Creek Dams | 10-2-8-2 | Dams on Long Creek to maintain streamflow in Souris River | 300 | | 17,436.15 |
| No. 1 | 13-1-8-2 | Creek to maintain streamflow in Souris River | | 137 | 8,729.62 |
| No. 2 | | | | 90 | 8,701.46 |

SASKATCHEWAN (Cont'd)

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity | Cost of Construction and Purchase of Land |
|-------------------------------------|------------|--|----------------------|------------------|---|
| <u>Qu'Appelle River Development</u> | | Series of dams and works to store water for irrigation and to maintain stream flow along Qu'Appelle Valley. | | | \$ |
| (a) Buffalo Pound Lake | 31-18-24-2 | Two dams, one to divert water from Moose Jaw Creek to Buffalo Pound Lake and one to impound water in Buffalo Pound Lake for irrigation of Qu'Appelle river flats | 5,300 | 35,000 | 81,032.20 |
| (b) Last Mountain Lake | Valeport | Works to control flow from Last Mountain Lake to Qu'Appelle River. Completed in 1941 | 1,000 | | 20,293.82 |
| (c) Round Lake | 14-18-3-2 | Works to control water level on Round Lake for irrigation of Qu'Appelle River flats. Completed in 1941 | | 14,700 | 39,990.12 |
| (d) Crooked Lake | 8-19A-5-2 | Works to control level of Crooked Lake for Irrigation of Qu'Appelle River flats, Completed 1941 | | 24,000 | |
| (e) Fairy Hill Flood Control | Fairy Hill | Works to control flooding of lands in Qu'Appelle Valley. Completed in 1941 | | | 4,302.10 |
| (f) Lebret Lake | Lebret | Rip-rap protection of lake shore against increased water level. Completed in 1940 | | | 16,340.18 |
| <u>Wood River Development</u> | | | | | |
| Wood River Storage Dams | Various | A series of 8 stockwatering dams on Wood River and tributaries | | 4,923 | 33,738.02 |

SASKATCHEWAN (cont'd)

| Project | Location | Description of Project | Irrigation Area Acres | Storage Capacity Ac.-feet | Cost of Con- struction and Purchase of Land |
|---|-------------|--|--------------------------|------------------------------|--|
| Miscellaneous Projects in Saskatchewan | | | | | |
| Arcola Water Supply | 26-8-4-2 | Improvements to existing water supply for Town of Arcola and District. | | Underground | 17,310.00 |
| Battleford Mental Hospital Irrigation | Battleford | Improvements to existing irrigation scheme | 800 | | 3,057.75 |
| Big Arm Storage | 30-25-25-2 | Storage dam on arm of Last Mountain Lake for pump irrigation. Completed | 5,000 | 5,200 | 13,060.66 |
| Caron Water Storage | Tp.17-20-2 | The object of this project is to provide water for stockwatering and irrigation along Thunder Creek and to augment the supply of water to the City of Moose Jaw. Water is pumped from the South Saskatchewan at 18-21-7-2 to a height of 335 at the height of land in 16-21-7-2, where a storage reservoir is provided. From this point the water flows by gravity along Thunder Creek to a point near Caron, where both underground and surface storage is possible. Water for Moose Jaw is pumped from wells at Caron. | | | |
| Kisbey Irrigation | Kisbey | Development on Moose Mountain Creek. Canals and dykes to flood hay lands. | 2,300 | 43,500 | 639,365.36 |
| Moose Mt. Lake | 9-11-8-2 | Dam supplying Kisbey Irrigation Project | 8,000 | 23,211.40 | 14,828.85 |
| Lake of the Rivers Dam | 4-8-29-2 | Stockwatering dam on coulee leading to Lake of the Rivers. Completed 1938 | 300 | | 10,805.14 |
| Moose Jaw Creek Flood Irrigation | Yellowgrass | Dam for Stockwatering and irrigation. Completed in 1938 | 2,250 | 2,180 | 7,517.75 |

SASKATCHEWAN (Cont'd)

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity A.C.-Feet | Cost of Construction and Purchase of Land |
|---------------------------|-------------|--|----------------------|----------------------------|---|
| Pipestone Lake | 6-15-3-2 | Dam at east end of Pipestone Lake to maintain streamflow in Pipestone Creek for stockwatering. Completed in 1933. | 1,600 | 10,828.44 | |
| Saskatoon Dam | Saskatoon | Concrete weir across south Saskatchewan River to raise water level at low stages of river flow by about 11 feet. Completed 1940. | 2,760 | 290,446.04 | |
| Wascana Creek Reclamation | Near Lajord | Reclamation of 13,000 acres of spring flooded land by straightening section of Wascana Creek. Completed in 1936. | 13,800.00 | | |
| Community Projects | Various | 182 Dugouts, 91 Stockwatering dams, 4 irrigation projects and one pipeline water supply project for community use in various localities. | 600 | 4,000 | 227,119.64 |
| Total for Saskatchewan | | 132,211 | 401,530 | 3,203,363.66 | |

LARGE P.F.R.A. WATER DEVELOPMENT PROJECTS CONSTRUCTED OR UNDER CONSTRUCTION IN
ALBERTA AS OF MARCH 31, 1942

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity Ac.-Feet | Cost of Construction and Purchase of Land |
|---|----------------------------------|---|-------------------------|------------------------------|---|
| <u>Rehabilitation of Existing Irrigation Projects in Alberta - P.F.R.A. Assistance Given to improve irrigation facilities and to enable increased settlement.</u> | | | | | |
| <u>I Eastern Irrigation District</u> | | | | | |
| (a) Sutherland Dam | Brooks | New dam across Lone Tree Creek to store waste water from E.I.D. works. Built by E.I.D. at cost of \$21,777.87 to which P.F.R.A. contributed \$15,000.00. Completed in 1936. | | | |
| (b) Cowoki Dam | Tp.18-13-4 | Dam and reservoir to supplement flow of Brooks aqueduct for irrigation of land not previously irrigated. Constructed by E.I.D. at cost of \$30,000.00 to which P.F.R.A. contributed \$7,490.00 | 2,280 | 14,000 | 15,000.00 |
| (c) Rolling Hills Irrigation | Tps. 14&15, Rges 12, 13 and 14-4 | Extension of irrigation from E.I.D. reservoir in Lake Newell to large tract of new land by repairs to distributary works and construction of canals. Completed in 1938. Under P.F.R.A. Settlement. Rehabilitation of existing project to ensure continued operation. Completed in 1936. | 25,000 | Lake Newell | 46,837.78 |
| II Canada Land and Irrigation Company | | | 45,000 (Approx.) | | |
| <u>III Leavitt Irrigation District</u> | Tp.2-28-4 | Dam at Driggs' Lake and canals to irrigate land to east of Mountain View. | 7,000 | 7,050 | 63,580.54 |
| IV Mountain View Irrigation District | Tps. 2 & 3 Rges 27&28 W.4 | Old irrigation project rehabilitated by Leavitt I.D. Works. Leavitt and Mountain View projects form one project | 4,200 | | 2,497.78 |
| V Magrath Irrigation District | Tp.5-23-4 | Repairs to existing main canal for irrigation. Completed in 1939. | | | 4,955 |
| | | | | | 2,755.58 |

ALBERTA (Cont'd)

| Project | Location | Description of Project | Irrigable Area Acres | Storage Capacity Ac.-feet | Cost of Construction and Purchase of Land |
|--|-----------|---|-------------------------|------------------------------|--|
| <u>Miscellaneous Water Development Projects in Alberta</u> | | | | | |
| Atlee Gas Wells | 10-23-7-4 | Exploratory borings to determine if sufficient Natural gas is available to power pump irrigation along Red Deer River. Gas flow adequate at 1,300 feet. Completed in 1938 | 1,000 | 3,000 | 34,503.58 |
| Bullshead | 28-8-4-4 | Dem on Bullshead Creek for stockwatering and irrigation. Water from Cypress Hills. Completed 1940. | 800 | 1,130 | 8,170.45 |
| Wildhorse Dam | 23-2-3-4 | Storage from Sage Creek for irrigation and stockwatering. Water from Cypress Hills | 3,600 | 4,500 | 24,369.78 |
| Test Borings | Various | Test borings to determine foundation conditions for proposed dams on the Red Deer, St. Mary, Waterton, Belly and Castle Rivers. Three projects | 16,243.50 | | |
| Community Projects | Various | Six dugouts, 25 stockwatering dams and 16 irrigation projects for community use. | 800 | 1,500 | 37,245.75 |
| | | Total for Alberta | 89,680 | 39,180 | 365,417.52 |
| TOTAL FOR ALL LARGE PROJECTS | | | 221,891 | 447,210 | 3,743,960.63 |

THE CULTURAL PROGRAM UNDER THE P.F.R.A.

Insofar as the P.F.R.A. program affects the technique of crop and livestock production on the prairies, it constitutes a special phase of the work of the Experimental Farms Service. This Service has been in intimate contact with, and has given many contributions to prairie agriculture since the early days of prairie settlement.

With the initiation of the rehabilitation program in 1935, the investigational and demonstrational work of the Experimental Farms was considerably expanded throughout the drought area, special attention being given to problems of soil drifting control, land reclamation, and farm home improvement. During 1941 P.F.R.A. work was in progress on 7 Dominion Experimental Farms, 47 District Experimental Substations, 17 land reclamation projects, over 800 regrassing projects, 4 large tree planting experiments and a large number of miscellaneous projects. Contact with farmers was maintained through the 35,800 members of 228 Agricultural Improvement Associations (A.I.A.s) which augment the regular advisory services of the Experimental Farms. In addition, a considerable amount of research on problems arising from drought conditions is undertaken, as well as soil and herbage surveys.

The Experimental Farms co-operate in various projects of the Land Utilization and Water Development phases of the P.F.R.A. program.

Throughout the course of P.F.R.A. cultural work the aim has been to encourage and assist farmers in solving their own problems. Material assistance has been limited to such supplies as would enable farmers and particularly communities to initiate desirable new lines of work, for which the farmers' resources were inadequate. In general, cultural improvements have been effected through demonstrations, judiciously located, and based on the results of experiments and on the collective experience of many agriculturists. Participation in the program by farmers has been secured through the activities of the Agricultural Improvement Associations through personal contacts established by the several Experimental Farms, and through the co-operation of provincial extension organizations.

Considerable improvements, during the first seven years currency of the P.F.R.A., which have been effected in the technique of prairie farming may be attributed to the cultural program. One outstanding improvement has been to control soil drifting effected largely through the adoption of strip farming and related practices. It is important to note that the efficacy of soil drifting control measures were conclusively demonstrated and applied during drought years, prior to the return of favourable climatic conditions in 1938. Another cultural improvement has been to minimize the adverse effect of drought on crop yields through increased frequency of summerfallow. On the domestic side, there has been a marked increase in vegetable and fruit gardening, together with tree planting, in which P.F.R.A. assistance in small scale irrigation has proved highly beneficial. These forms of farm home improvement have not been promoted with a view to making prairie agriculture entirely self-sufficient, an objective which the climate would render impracticable, but rather to enable the farmer to survive the occasional hazards encountered in the exclusive production of grain crops and to improve rural living conditions.

PROGRESS OF P.F.R.A. CULTURAL WORK
DURING THE FISCAL YEAR 1941-42.

In broad outline the P.F.R.A. cultural program was continued during 1941-42 in much the same manner as in previous years. War

conditions have entailed some retrenchment and reduction in personnel. Changes in production, especially as regards the reduction in wheat acreage and the expansion in livestock production have altered appreciably the relative importance of the problems which are encountered in P.F.R.A. work. Moreover, the great urgency which attended some phases of the P.F.R.A. program in 1935, particularly as regards the control of soil drifting, has been appreciably lessened, partly by more favourable weather conditions, but largely through the success obtained in conducting the work. Nevertheless, the danger of recurring droughts and soil drifting remains as an inherent hazard of prairie agriculture, requiring constant vigilance, continued research and preparedness for immediate action.

A brief summary of P.F.R.A. Cultural activities during 1941-42 is presented herewith. Principal locations are indicated on a map on page 51.

DOMINION EXPERIMENTAL FARMS

Five Dominion Experimental Farms and Stations have served since 1935 as key centres in their districts of P.F.R.A. cultural work. These are located at Brandon, Manitoba; Indian Head, Saskatchewan; Swift Current, Saskatchewan; Scott, Saskatchewan; and Lethbridge, Alberta. The Dominion Experimental Station at Morden, Manitoba, has served as a P.F.R.A. horticultural centre, while the Dominion Range Experimental Station at Manyberries, Alberta, has promoted rehabilitation activities in ranching areas. Extension of the P.F.R.A. area in the past few years has involved the Dominion Experimental Stations at Lacombe, Alberta, and Melfort, Saskatchewan in some P.F.R.A. activities. Thorough knowledge of the agricultural conditions in their various districts and the ability to draw on the scientific resources of the Dominion and Provincial governments, has enabled these Dominion Experimental Farms to encounter various rehabilitation problems with expedition and efficiency.

AGRICULTURAL IMPROVEMENT ASSOCIATIONS

For the purpose of securing community action on problems arising from drought and soil drifting, Agricultural Improvement Associations have been organized by farmers, with assistance from the P.F.R.A. in 228 districts of the drought area. Popularly referred to as A.I.A.s, these associations have been influential in improving prairie agriculture, partly by providing contacts between individual farmers and various phases of the P.F.R.A. work and partly in bringing about co-operative action on common problems. They have also had some value in the purely social side of prairie farming.

The success of the A.I.A. movement has been reflected in the steady increase from year to year in the number of associations and members. During 1935 some 31 associations, with 2,600 members, were organized. By the end of 1939 there were 204 associations, with 32,000 members. Prior to 1940, financial grants based on membership, were made to all associations from P.F.R.A. funds. In spite of the stoppage of these grants, the number of associations increased to 210 with 33,600 members in 1940 and to 228 with 35,800 members in 1941. These figures would indicate that the strength of the A.I.A. movement lies in its usefulness to the prairie farmer rather than in governmental sponsorship.

During 1941 the work of A.I.A.s continued much as in previous years, as described in previous reports. The increase in the number of associations during the year, from 210 to 228, was due to the establishment of 18 new A.I.A.s in the northeastern part of the Indian Head territory. This increase was occasioned by a recent extension of the P.F.R.A. boundary.

RECLAMATION PROJECTS

For the purpose of determining the best methods of re-establishing crop production on areas which have been temporarily abandoned due to soil drifting, or of returning severely drifted submarginal areas to permanent grass, reclamation projects have been conducted at 17 locations throughout the drought area. The total area covered by these projects is 13,178 acres.

The general procedure followed in conducting a reclamation project has been to select an area on which severe drifting has put a stop to crop production, and to determine by what methods the land could be reclaimed for crop production or grass. In such cases the beneficial result has been to remove the menace of continual soil drifting to adjacent good land. The essential difference between a reclamation project to re-establish grass cover and a regrassing project is that the main object of reclamation has been to stop chronic soil drifting, while the object of regrassing projects has been to establish grass cover on drifted or undrifted land. On two reclamation projects, at Melita, Manitoba and Mortlach, Saskatchewan, a considerable amount of experimental work on the return and maintenance of crop production on formerly abandoned land is in progress. A list of the various P.F.R.A. reclamation projects, with some observations on the progress of the work, is presented in Table 5a.

During 1941, the various reclamation projects stood as examples of what might be accomplished in restoring severely drifted land to economic use. On the Melita reclamation project in particular the results of effective reclamation measures followed by farming practices, which would prevent a recurrence of the drifting, were displayed in a convincing manner. Work on many of the other projects was discontinued, the main objectives having been attained. All projects, however, are being kept under continued observation.

The principal findings made in various types of reclamation work have been outlined in the "Report on Cultural Activities Under the Prairie Farm Rehabilitation Act for the Fiscal Year ending March 31, 1940".

TREE PLANTING

Tree planting, with the object of improving living conditions on prairie farms, and of providing shelter to gardens and buildings against strong winds, has been practised in the Prairie Provinces for a number of years. Since 1930, the Experimental Farms Service has been distributing free planting material to prairie farms, continuing a service originally provided by the Dominion Department of the Interior. Insofar as the distribution of free trees applies to the P.F.R.A. area, this service now forms an integral part of the rehabilitation program. From the inauguration of the program in 1935 to the end of 1941, a total of 12,750,216 free trees have been distributed under the P.F.R.A., of which 1,836,015 trees were supplied in 1941.

Field Crop Shelterbelt Experiments

The most distinctive phase of tree planting work under the P.F.R.A. has been the experimental planting of large scale shelterbelt systems by Field Crop Shelterbelt Associations. Four of these associations have been organized, each composed of farmers located on a compact group of farms covering approximately one township of 36 square miles. These farmers have undertaken, with government assistance, to plant and maintain shelterbelts around their fields with the object of determining to what extent a fairly extensive system of shelterbelts will exert a beneficial influence on crop production by reducing the erosive and drying effects of strong winds and by trapping snow for the local increase of soil moisture.

Table 5

Reclamation Projects under the P.F.R.A.

| Location of Project | Acres in Project | Year Started | Experimental Farm Conducting Work. | | Progress of Work on Project |
|------------------------------|------------------|--------------|------------------------------------|------|--|
| | | | 1935 | 1936 | |
| Melita, Man. | 1,280 | 1935 | Brandon, Man. | | This project, established on land which was formerly abandoned due to soil drifting, is used for extensive experiments on crop production. |
| Craik, Sask. | 180 | 1937 | Indian Head, | | Completely reclaimed by grass by 1939. |
| Aylesbury, Sask. | 950 | 1936 | " Sask. | | Drifting controlled. Grass being established. |
| Kisbey, Sask. | 1,550 | 1936 | " " | | Scattered areas in Kisbey-Arcola area. |
| Brittania School, Sask. | 770 | 1937 | " " | | Drifting controlled. Grass being established. |
| North Portal, Sask. | 235 | 1938 | " " | | Drifting controlled. Grass being established. |
| Estevan, Sask. | 958 | 1939 | " " | | Drifting controlled. Grass being established. |
| Silton, Sask. | 150 | 1940 | " " | | Regrassing in progress. |
| Bradwell, Sask. (Blucher) | 411 | 1940 | " " | | Drifting completely controlled. |
| Handsworth, Sask. | 414 | 1939 | " " | | Drifting completely controlled. |
| Mortlach, Sask. | 1,280 | 1936 | Swift Current, Sask. | | This area is fully under regrassing reclamation, partly under crop production experiments. Drifting has been controlled. Severe soil drifting completely controlled. |
| Cadillac, Sask. | 800 | 1936 | " " | | |

Table 5 (Continued)

| Location of Project | Acres in Project | Year Started | Experimental Farm Conducting Work | Progress of Work on Project. |
|---------------------|------------------|--------------|-----------------------------------|---|
| Meyronne, Sask. | 240 | 1937 | Swift Current, Sask. | |
| Vanguard, Sask. | 3,200 | 1937 | " | Creased wheat grass now established on about one-third of this drifted area. |
| Youngstown, Alta. | 320 | 1936 | Lethbridge, Alta. | Grass is being established on part of this area. About 325 acres harvested for hay in 1941. |
| Cereal, Alta. | 240 | 1938 | " | Completely reclaimed by grass by 1938. Experiments on maintenance of grass cover are in progress. |
| Hutton, Alta. | 200 | 1935 | " | Drifting controlled. Regrassing in progress. |
| | | | | Completely reclaimed by grass. |
| | | | | Turned back to owner, but kept under observation. |

Farmers associated with the government in this work have received free tree seedlings, as well as financial assistance for planting and care of shelterbelts. The four associations in operation are located at Lyleton, Manitoba; Conquest, Saskatchewan; Aneroid, Saskatchewan; and Porter Lake (Ribstone) Alberta. By the end of 1940, these associations had planted 710 miles of shelterbelt, consisting largely of caragana hedge, but with some ash, elm, and maple as local conditions might warrant.

The largest and oldest of the association plantations is located at Conquest, where some 381 miles of shelterbelts have been planted by 76 farmers, representing the majority of farms throughout a block of land covering 63 square miles. This project was started in 1935 and despite some very adverse seasons, definite progress has been made, some of the shelterbelts being in 1941 from 5 to 7 feet high.

The shelterbelt plantations at Lyleton with 255 miles of shelterbelt, while somewhat smaller than at Conquest, have similar objectives and are making similar progress. At Aneroid, however, the ravages of drought and insects have proved very discouraging to association members. Nevertheless, at this location some 59 miles of shelterbelt have been planted.

The results of the foregoing tree-planting experiments will not be available for several years.

Conditions Affecting Tree Planting in 1941

Weather conditions in 1941 were generally favourable for tree growth throughout the Prairie Provinces. These conditions are in sharp contrast with those obtaining during the drought years 1930 to 1937, with the result that both new planting and established plantations have made satisfactory growth.

In certain districts outbreaks of cankerworm, Cecropia moth, blister beetles and grasshoppers caused considerable damage to trees. Where spraying was done to control cankerworm the results have been very encouraging.

Historical Note.

It may be of interest to note that beginning in 1901, the Dominion Government has supplied free trees in the Prairie Provinces for planting on farms. For the 41-year period ending in 1941 a total of 180,064,380 broadleaf trees have been distributed free. In addition, 3,655,206 coniferous trees, for which a small charge has been made, have been supplied to prairie farmers. In 1931 this work, formerly conducted by the old Département of the Interior, was taken over by the Dominion Experimental Farms Service.

REGRASSING

The outstanding characteristic of agriculture in the Prairie Provinces of Canada is the great predominance of cereal culture and grazing over other forms of agricultural production. In 1940, nearly 61 per cent of the agricultural land in the Prairie Provinces was under cereal culture and 37 per cent in grazing, while cultivated hay and non-cereal crops accounted for only 1.4 and 0.6 per cent respectively. Under existing conditions there is little opportunity for expansion in the production of other than grass or cereal crops, while cereal production has been for some years in excess of market requirements. It is evident, therefore, that more extensive and intensive grass production, marketable through livestock, presents attractive possibilities for economic utilization of prairie lands. This condition is the basis of the P.F.R.A. regrassing program.

An effective regrassing program for the Prairie Provinces has four main objectives:

1. The improvement of herbage on rangeland at present under grazing.
2. The establishment of grass on marginal or submarginal land which has been cultivated and subsequently abandoned.
3. The reclamation with grass of focal areas of soil drifting.
4. The introduction of grass in cropping systems for the production of forage and for soil improvement.

The first of these objectives, the improvement of grazing on rangeland, is largely a problem of range management and as such has been since 1928 a major subject of investigation on the Dominion Range Experimental Station at Manyberries, Alberta, and more latterly on the P.F.R.A. Community Pastures. To the other objectives, the P.F.R.A. program has made material contributions, through its investigational and demonstrational activities. These activities have been conducted through regrassing demonstrations, reclamation projects, and by the distribution of seed for the establishment of seed-plots by members of Agricultural Improvement Associations.

Since the inception of the P.F.R.A. program in 1935, regrassing projects have been conducted on some 246,000 acres. Regrassing experiments on over 800 widely distributed points throughout the drought area, and covering in the aggregate some 25,000 acres, have served to demonstrate the results of different species and methods of seeding, as well as to secure information on these and other factors of regrassing technique. For the propagation of seed of suitable grasses, seed-plots of from two to five acres each have been started on over 30,000 farms with seed supplied by the Experimental Farms Service through the A.I.A.s. These seed-plots, covering in the aggregate some 120,000 acres have helped to relieve the scarcity of grass seed, particularly of crested wheat grass, which prevailed during the early years of the P.F.R.A. program. The approximate acreages regrassed on reclamation projects and community pastures are 10,000 acres and 91,000 acres respectively. Regrassing on community pastures is done by the Experimental Farms in the interest of the P.F.R.A. Land Utilization administration at Regina.

During the past two years the Dominion Experimental Farms have assisted in the grassing of new airports throughout the Dominion. In the Prairie Provinces this service has included, on many airports, the actual regrassing work with Experimental Farms equipment. For this purpose, the experience gained through P.F.R.A. regrassing work has proved invaluable. During 1940 and 1941, some 24,000 acres on 37 prairie airports have been seeded to grass with a considerable degree of success.

Altogether, including airports, approximately 271,000 acres in the Prairie Provinces have been regrassed through the P.F.R.A. activities of the Dominion Experimental Farms.

In connection with this regrassing work, it should be borne in mind that prairie farmers have been somewhat hesitant about seeding cultivated grasses on their farms. The tendency has been to utilize all good land for cereal culture and to depend on native grasses, supplemented by grain cut early for hay, for hay and pasturage. There have been several objections to the use of cultivated grass including low yields, short duration of stands, extra care required in seeding, and the slowness with which grass became established. In connection with the last objection it might be observed that, while hay can be harvested in Eastern Canada in one year after seeding, in the drier parts of Western Canada, no reasonable yield of cultivated grass hay can be expected until the second year after seeding.

In spite of these objections, however, there has been, in recent years, an appreciable increase in the acreage of cultivated hay in the Prairie Provinces. According to the Census of Canada, the acreage of cultivated hay in the Prairie Provinces increased from 766,123 acres in 1931 to 1,093,981 acres in 1936, and further to 1,435,202 acres in 1941. It is probable that three main factors have contributed to this increase; the introduction of rested wheat grass, the subsidies provided for the replacement of wheat acreage by grass acreage under the Wheat Acreage Reduction Policy of the Dominion Government, and the regrassing program under the P.F.R.A.

P.F.R.A. Regrassing in 1941

During 1941 regrassing work continued along the lines described in previous reports. As regards experimental work, considerable attention has been given to progress of demonstration lots sown in previous years, with observations on the survival of different species of grasses, competition of weeds and suitability of different species to varying conditions of soil and climate. The time required for different methods and rates of sowing to produce a satisfactory stand has been carefully noted.

Regrassing activities in the A.I.A.s were largely confined to supplying seed to new members, principally in the new associations organized from the Indian Head Experimental Farm. In the older A.I.A. districts many of the original seed plants have been replaced by or extended into larger fields.

Harvesting Crested Wheat Grass Seed on Community Pastures

In 1941, a scarcity of crested wheat grass seed led to the harvesting of this seed on a number of P.F.R.A. Community Pastures. A total of approximately 7,500 acres was harvested with P.F.R.A. and hired equipment, and cleaned seed to the amount of 1,355 pounds was secured. Harvesting was done in the interest of the P.F.R.A. Land Utilization administration by the Experimental Farms. Owing to adverse weather conditions, the average yield of cleaned seed was somewhat low. Harvesting was performed with swathers and combines on sections of the pastures which were temporarily withheld from grazing. Seed secured from this harvesting has been utilized to extend various regrassing projects.

Methods of Regrassing

Information on methods of regrassing, derived from P.F.R.A. work, is contained in the recently prepared Publication 720 of the Dominion Department of Agriculture, entitled "Regrassing Abandoned Farms, Submarginal Cultivated Lands, and Depleted Pastures in the Prairie Areas of Western Canada." Copies of this publication may be secured from the Publicity and Extension Division, Department of Agriculture, Ottawa.

Seed Supplies for Regrassing Projects

Throughout the course of P.F.R.A. regrassing work it has been necessary to make extensive purchases of grass and legume seed. This seed has been purchased through the Plant Products Division of the Dominion Department of Agriculture. The total amount of seed purchased during 1941-42, as well as in preceding years, is shown in the following table.

Amounts of Grass and Legume Seed
Purchased for P.F.R.A. Cultural Work

Table 6 To March 31, 1942

| Kind of Seed | Total for 1935 to March 31, 1941. | Total for 1941-42 March 31, 1941. | Total for 7 years to March 31, 1942. | |
|-------------------------|--|--|--|-----|
| | | | lb. | lb. |
| Grasses | | | | |
| Crested Wheat Grass | 740,750 | 14,250 | 755,000 | |
| Brome Grass | 272,790 | 17,920 | 290,710 | |
| Slender Wheat Grass | 23,990 | 500 | 24,490 | |
| Timothy | 2,000 | 10 | 2,010 | |
| Reed Canary Grass | 2,500 | 500 | 3,000 | |
| Creeping Red Fescue | 2,200 | 420 | 2,620 | |
| Sudan Grass | 300 | - | 300 | |
| Mixed Grasses | 12,500 | - | 12,500 | |
| Red Top | 600 | - | 600 | |
| Meadow Fescue | - | 500 | 500 | |
| Kentucky Blue Grass | - | 10 | 10 | |
| Legumes | | | | |
| Alfalfa | 181,610 | 10,600 | 192,210 | |
| Sweet Clover | 250,400 | 4,400 | 254,800 | |
| Alsike | 1,500 | 100 | 1,600 | |
| Altaswede Red Clover | - | 100 | 100 | |
| Total | 1,491,140 | 49,310 | 1,540,450 | |

Grazing Surveys and Grassland Research

The acreage covered by these surveys in each of the five years during which this work has been in progress is shown on the following table.

Pasture Surveys under the P.F.R.A.
1937 to 1941 inclusive

Table 7

| Year | Areas Surveyed | Acres |
|------|---|-----------|
| 1937 | Special Areas of Alberta and ranches in Sask. | 592,640 |
| 1938 | Great Sand Hills and Community Pastures | 809,620 |
| 1939 | Community Pastures and Special Areas | 1,043,940 |
| 1940 | Community Pastures and Ranches | 441,180 |
| 1941 | Community Pastures | 247,460 |
| | Total | 3,134,840 |

In addition to the area shown in Table 7, a resurvey was made in 1941 of 156,320 acres in the Val Marie and Beaver Valley Community Pastures, bringing the total area surveyed in 1941 to 403,780 acres.

The grazing surveys conducted from Swift Current have resulted in considerable accurate information on the nature and value of native grazing herbage in different parts of the Canadian prairies. Further, through the experience gained in five years of surveying, a refined technique of evaluating the economic value of different types of grassland for livestock production has been evolved. In particular, a combination of methods has been evolved for the accurate estimation of quantity of forage available for livestock in any area of rangeland, and of translating this information into terms of increase in weight of livestock, and therefore, into terms of financial value per acre. There has also been secured a fund of information on various phases of rangeland maintenance and improvement. Combined with the results of rangeland investigation conducted since 1924 at the Dominion Range Experimental Station, the information gained in grazing surveys has made possible appreciable improvements in range management.

As will be observed, much of the grazing survey work has been done on Community Pastures. This work has greatly facilitated the development of these pastures, by indicating the potential carrying capacity, the distribution of various plant associations, suitable locations for winter and summer grazing, and areas which can be improved by regrassing.

Pasture Research Areas

One development of the Grazing Survey program has been the establishment of five Pasture Research areas in Saskatchewan. The purpose of these research areas is to provide means of studying the nature of and changes in the vegetation on certain characteristic types of grazing lands. Part of each area is fenced off to prevent grazing, while the remainder is under ordinary grazing. The five areas, established in 1941, are located at Cadillac (112 acres), Matador (1960 acres), Consul (965 acres), Webb (810 acres), and Ituna (960 acres), the aggregate acreage being 5,807 acres, all in Saskatchewan.

AGRICULTURAL DEVELOPMENT OF LARGE IRRIGATION PROJECTS

Under the Water Development Branch of the Prairie Farm Rehabilitation Administration at Regina, a number of large irrigation projects have been constructed or are under construction in various parts of the drought area. The initial agricultural development of these projects, involving the levelling of land, construction of field ditches, and the seeding and irrigating of the first crops has been undertaken by the Dominion Experimental Farms. Projects thus prepared are turned over to the Land Utilization Branch at Regina for settlement.

Four large projects in southwestern Saskatchewan; Val Marie (6000 acres), West Val Marie (4100 acres), Eastend (3200 acres), and Maple Creek (8100 acres) have been agriculturally developed by the Swift Current Experimental Station, and turned over to the Land Utilization Branch for settlement. Certain problem or experimental areas on each of these projects is still operated by the Swift Current Station, however, for research purposes. The agricultural development of the Rolling Hills project (25,000 acres) is being supervised from the Dominion Experimental Station at Lethbridge, Alberta. See page 9.

"Follow Up" Irrigation Program

Since the inauguration of the P.F.R.A. program in 1935, over 1,000 farmers have been assisted in the construction of small irrigation projects, and nearly 300 farmers have been settled on large P.F.R.A. irrigation projects. For the most part these farmers had no previous experience in irrigation farming. To assist such farmers to learn the best methods of irrigating crops or vegetables on their own farms the Dominion Experimental Farms have made available to them the advisory services of practical irrigators. These irrigators assist beginners in laying out ditch lines, levelling land and in applying the water to the crops. During 1940, over 400 farmers had been helped by this program.

In 1941, this work was continued, but on a somewhat reduced scale, only 178 projects having been covered.

SOIL SURVEYS

The nature and progress of soil survey work in the Prairie Provinces was outlined in the report on Proceedings under the Prairie Farm Rehabilitation Act for the Fiscal Year ending March 31, 1941. Additional areas surveyed in 1941-42 included 610,500 acres in Manitoba, 1,535,000 acres in Saskatchewan, and 3,850,000 acres in Alberta.

PROGRESS OF WORK ON DISTRICT EXPERIMENT SUBSTATIONS UNDER THE P.F.R.A.

The purpose of the work conducted on District Experiment Substations is to learn the best methods of farming throughout that portion of the Prairie Provinces which has suffered in recent years from drought and soil drifting. A District Experiment Sub-Station is a private farm usually comprising about 640 acres, the operator of which agrees to farm his land under the direction of the Dominion Experimental Farms Service. As each substation is representative of other farms in the district and enjoys no special advantages as regards soil, equipment or labour, the results secured in farming these substations according to scientific principles can be duplicated on neighbouring farms. Another valuable factor in substation work is that it enables the results of work on Experimental Farms to be applied over a much wider range of soil and climatic conditions than would be possible on Experimental Farms alone. For these reasons it is perhaps legitimate and useful to consider the substations as demonstrations of good farming practices for their various districts.

During the first year of the P.F.R.A. program 39 substations were established. This number was increased to 52 in 1938, and later reduced to the present number of 46. The distribution of substations is designed to meet varying local peculiarities of soil or climate and at the same time provide demonstrational facilities for all farming districts in the P.F.R.A. area.

(Supervision of substation work is undertaken by supervisors of the Division of Irrigation Stations. Each supervisor operates from the Dominion Experimental Farm or Station which serves the district in which the substations under his supervision are located. At present there are seven supervisory districts with headquarters at Brandon, Manitoba; Indian Head, Saskatchewan; Swift Current, Saskatchewan; Scott, Saskatchewan; Melfort, Saskatchewan; Lethbridge, Alberta; and Iacome, Alberta. A list of substations both active and discontinued is presented in Table 8. This list indicates the location, type of soil, topography, and major problems of each substation. In the description of soil type, the soil series name, if known, is presented in brackets. A map showing the location of all substations is presented on page 51.

District Experimental Sub-Stations under the
Prairie Farm Rehabilitation Act

Table 8

| Sub-Station | Soil | Topography | Type of Farming | Major Problems |
|---|--|---|---------------------|--|
| Sub-Stations Supervised from the Dominion Experimental Farm, Brandon, Manitoba. | | | | |
| Boissevain, Man. | Dark-brown-black transition clay loam (Waskada) | Undulating to gently rolling, and sloping land which promotes water erosion | Grain and livestock | Control of water erosion by terracing, contour, cropping and related practices. Soil drifting also a problem. |
| Crystal City, Man. | Black very fine sandy loam to clay loam (Carroll) | Smoothly undulating | Grain and livestock | Serious soil drifting caused by depletion of soil fibre and low moisture holding capacity of soil. |
| Goodlands, Man. | Dark-brown-black transition clay loam (Maskada) | Undulating to gently rolling | Grain and livestock | Soil drifting. |
| Hergrave, Man. | Black clay loam on stiffer compact sub-soil (Oxbow) | Undulating with few sloughs to roughly undulating with many sloughs | Grain and livestock | This sub-station was established to introduce rotations which are likely to maintain fertility, increase soil fibre and provide feed and cash crops. |
| Lyleton, Man. | Black very fine to fine sandy loam (Souris) | Smooth, nearly level | Grain and livestock | Severe wind erosion which has roughened land surface. |
| Pipestone, Man. | Dark brown-black transition sandy soil over gravelly sub-soil (Bede) | Gently rolling | Grain and livestock | This sub-station is located on land of limited productivity with low moisture holding capacity and which drifts readily. |

Sub-Stations Supervised from the Dominion Experimental Farm, Indian Head, Sask.

| Sub-Station | Soil | Topography | Type of farming | Major Problems |
|--------------------------------------|---|--------------------------------|--|---|
| Alameda, Sask. | Dark brown loam (Oxbow and Weyburn) | Level and free from stones | Grain and livestock | Rust, drought and grasshoppers, slight soil drifting. |
| Arcoia, Sask. | Dark brown-black transition (Oxbow) | slightly undulating, No stones | Wheat and livestock | Severe soil drifting. |
| Aylesbury, Sask. | Dark brown clay loam | Level and free from stones | Wheat | Slight soil drifting. |
| Davidson, Sask. | Dark brown loam (Weyburn) | Level and free from stones | Wheat | Slight soil drifting. |
| Edaville, Sask. | Brown clay loam, with numerous "burnouts" | Level and free from stones | Grain and livestock | Soil drifting and management of "burn-out" soils. |
| Strasbourg, Sask. | Dark brown clay loam (Weyburn) | Rolling with a few stones | Grain and livestock | Slight soil drifting. |
| Avonlea, Sask. | Greyish brown clay loam "Echo" | Grain | Grain | Severe soil drifting with heavy accumulation blown in from nearby land. |
| Dunblane, Sask. Discontinued 1939 | Brown clay loam (Haverhill) | Grain and livestock | Soil drifting control and pasture improvement. | Soil drifting. |
| Weyburn, Sask. Discontinued 1939 | Dark brown clay loam (Weyburn) | Rolling | Grain | Soil drifting. |
| Willowbunch, Sask. Discontinued 1940 | Brown clay loam (Haverhill) | Undulating | Grain and some livestock | Severe soil drifting. |

Sub-Stations Supervised from the Dominion Experimental Station, Swift Current, Sask.

| Sub-Station | Soil | Topography | Type of Farming | Major Problems |
|--------------------|--|--|--------------------------|---|
| Canuck, Sask. | Brown loam (Haverhill) to clay loam (Echo) | Undulating to rolling with some stones | Wheat and livestock | |
| Carmichael, Sask. | Dark brown clay loam (Cypress) | Undulating with some stones | Wheat and livestock | This sub-station is located on the Cypress hills. Soil drifting, wire worms and sawflies. |
| Fox Valley, Sask. | Brown silty clay loam (Fox Valley) | Undulating to rolling with few stones | Wheat and livestock | Drought and Soil drifting. |
| Gravelbourg, Sask. | Brown silty clay loam (Fox Valley) | Level and free from stones | Wheat and some livestock | Soil drifting. |
| Kincaid, Sask. | Brown clay loam (Haverhill) | Undulating with a few stones | Wheat | Soil drifting. |
| Limerick, Sask. | Brown loam to clay loam (Haverhill) | Undulating with some stones | Wheat | Soil drifting. |
| Riverhurst, Sask. | Brown loam | Undulating with some stones | Wheat and livestock | Drought and soil drifting. |
| Shackleton, Sask. | Brown silty clay loam | Undulating with few stones | Wheat | Soil drifting. |
| Shaunavon, Sask. | Brown loam to clay loam (Haverhill) | Undulating with few stones | Wheat | Drought, soil drifting and grasshoppers. |
| Tompkins, Sask. | Brown silty clay loam (Haverhill) | Rolling with few stones | Grain and livestock | Soil drifting. |

Sub-Stations -- Swift Current, Sask. (Cont'd)

| Sub-Station | Soil | Topography | Type of Farming | Major Problems |
|--|---|---|---------------------|--|
| Tugaskie, Sask. | Dark brown loam to clay loam (Weyburn) | Level to undulating with a few stones | Grain and livestock | Soil drifting. |
| Valjean, Sask. | Brown fine sandy loam (Hatton) | Rolling with some stones | Grain and livestock | Severe soil drifting. |
| Herbert, Sask. Discontinued 1939 | Brown loam (Haverhill) | Undulating | Grain | Soil drifting. |
| Lisieux, Sask. Discontinued 1940 | Brown loam (Haverhill) | Decidedly rolling | Grain | Soil drifting. |
| Parkbeg, Sask. Discontinued 1939 | Brown loam (Haverhill) | Moderately rolling | Grain | Soil drifting. |
| Piapot, Sask. Discontinued 1939 | Brown fine sandy loam (Haverhill) | Gently rolling | Grain and livestock | Drought and severe soil drifting the latter controlled by strip farming and grass. |
| Sub-Stations Supervised from the Dominion Experimental Station, Scott, Sask. | | | | |
| Kindersley, Sask. | Brown clay (Sceptre) | Level, no stones | Wheat | Soil drifting. |
| Loverna, Sask. | Clay, clay loam and silty loam (Fox Valley) | Rolling to hilly, very few stones | Grain | Soil drifting. |
| Consort, Alta. | Brown medium loam over clay subsoil | Rolling, somewhat broken with sloughs and bluffs, some stones | Wheat and livestock | Soil drifting. This sub-station is located at a fairly high altitude and is more subject to frosts than other sub-stations in the Scott territory. |
| Matiskow, Alta. | Dark brown sandy loam | Rolling, no stones | Grain and livestock | Soil drifting control and grassing. |

Sub-Stations Supervised from the Dominion Experimental Station, Melfort, Sask.

| Sub-Station | Soil | Topography | Type of Farming | Major Problems |
|--|---|------------------------------|--------------------------|---|
| Rosetown, Sask. | Dark brown silty clay loam (Elstow) | Level to undulating | Wheat | Soil drifting. |
| Juniata, Sask. | Dark brown fine sandy loam (Asquith) | Level to undulating | Wheat and some livestock | Soil drifting. |
| Guernsey, Sask. | Dark brown fine sandy loam (Asquith) | Level to undulating | Grain | Soil drifting. Perennial Sow Thistle a problem. |
| Sub-Stations Supervised from the District Experimental Station, Lethbridge, Alberta. | | | | |
| Acadia Valley, Alta. | Brown clay loam to clay stones | Undulating, free from stones | Farm-ranch organization | Soil drifting and grass improvement. |
| Bindloss, Alta. | Brown silt loam | Undulating, free from stones | Wheat | Soil drifting and wheat stem saw-fly. |
| Cessford, Alta. | Brown clay loam, numerous "burn-outs" | Undulating, free from stones | Farm-ranch organization | Soil drifting and grass improvement located in special area of Alberta. |
| Clareholm, Alta. | Dark brown fine sandy loam | Level, free from stones | Wheat and livestock | Soil drifting. |
| Craigmyle, Alta. | Dark brown fine sandy loam to clay loam | Gently rolling, a few stones | Wheat | Soil drifting. |
| Foremost, Alta. | Brown silt loam | Level, free from stones | Wheat | Soil drifting. |
| Lomond, Alta. | Brown clay loam | Gently rolling, few stones | Wheat and some livestock | Soil drifting. |

Sub-Stations -- Lethbridge, Alberta.

| Sub-Station | Soil | Topography | Type of Farming | Major Problems |
|---|-----------------------|------------------------------|--------------------------|--|
| Nobleford, Alta. | Dark brown silt loam | Undulating, free from stones | Wheat | This sub-station was established principally for experimental work on the control of wheat stem sawfly. |
| Pincher Creek, Alberta. | Black clay loam | Gently rolling, few stones | Wheat and livestock | This sub-station is located under fairly good moisture conditions in foothills. Summer-fallowing practised more for weed control than for moisture conservation. Both wind and water erosion are problems. |
| Whitla, Alberta. | Brown silt loam | Undulating, few stones | Wheat and livestock | Soil drifting. |
| Sub-Stations Supervised form the Dominion Experimental Station, Lacombe, Alberta. | | | | |
| Castor, Alta. | Dark brown loam | Gently undulating to rolling | Grain | Soil drifting, sawflies and grasshoppers. |
| Drumheller, Alta. | Dark brown gumbo clay | Gently rolling | Wheat and some livestock | Soil drifting, water erosion, weed damage and some grasshopper damage. |
| Rockyford, Sask. | Dark brown clay loam | Level to undulating | Grain | Soil drifting, serious sawfly damage. |

The Control of Soil Drifting on District Experiment Substations

The susceptibility of prairie soils to wind erosion arises primarily from the dry climate and the prevalence of strong winds. Aside from the grazing of livestock on natural pasture, the dry climate limits prairie farming almost entirely to the production of cereal crops, principally wheat and, to a lesser extent, oats and barley. This type of cereal culture imposes on prairie farmers the necessity of summerfallowing part of the crop land each year, for the combined purposes of conserving soil moisture and of controlling weeds. Summerfallowing, in turn, exposes a considerable percentage of the land, without vegetative protection, to the erosive effects of the strong winds, so that soil drifting is a constant hazard to prairie agriculture. As it is impractical to produce crops on the Canadian prairies without summerfallowing the control of soil drifting must be effected principally by the adoption of such cropping and tillage practices as will reduce drifting on fallow land to a minimum.

With the inception of the P.F.R.A. program in 1935, certain practices which had already proved useful for the control of drifting in some localities were put in operation on each of the substations. These practices included strip farming, ploughless fallow for the maintenance of "trash cover", cloddy tilth, listing, and the establishment of permanent grass on areas which drifted with great ease.

Results of Soil Drifting Control Measures

Inasmuch as the cropping and tillage practices described above have been effective in controlling soil drifting on District Experimental Substations for a period of seven years, it may be useful to note to what degree they have been successful and to what extent they have been adopted by prairie farmers in general.

As conditions vary from district to district in the P.F.R.A. area, moreover, the regional adaptations and modifications of these practices may prove of interest. Accordingly, the following summary of soil drifting control work is based on the findings of the substation supervisors in each of the supervisory districts.

Southwestern Manitoba - In this district, supervised from Brandon, strip farming has controlled soil drifting on the substations, where accompanied by proper cultural practices. Observations indicate that, from the standpoint of effectiveness and practicability, the most satisfactory width of strip is from 13 to 20 rods. On the lighter soils, for instance at Lyleton, the strips should not be wider than 16 rods, while at Goodlands on a heavier soil, a 20-rod strip is satisfactory.

As regards tillage operations, results secured on substations in this district indicate that ploughless methods of summerfallowing are to be recommended both with respect to yield and the beneficial effect they exert in the control of soil drifting. Either the one-way disc and cultivator or the cultivator alone may be used.

Southeastern Saskatchewan - On substations in the district supervised from Indian Head soil drifting has been controlled by means of strips of from 16 to 20 rods in width, provided suitable methods of tillage are also employed. There are indications, however, that considerably wider strips would prove satisfactory, in which case certain disadvantages of strip farming, notably possible saw-fly attack, would be removed. Indeed, in many parts of the district, it has been possible to control soil drifting without strip farming, providing judicious tillage has been employed to retain trash on the surface, and to avoid unnecessary

pulverization of the soil. For this reason, strip farming may not have been as widely adopted by farmers in this district as in some other parts of the P.F.R.A. area.

On most of the Indian Head substations summerfallow tillage is performed with the one-way disc for the first operation and the cultivator for subsequent operations. At Strasbourg and Davidson, however, better control of drifting has been effected by disc harrowing early in the summer to kill young weeds, then ploughing and thereafter cultivating to keep down weed growth. This fact indicates that the ploughless fallow cannot be given a blanket recommendation for all parts of the Canadian prairies.

Southwestern Saskatchewan - Substations in this district are supervised from Swift Current. At the outset of P.F.R.A. work, soil in this district was drifting badly. Crops had been light and mostly harvested by binders, so that little trash was left on the surface. Under these conditions, the evident beneficial effects of strip farming and suitable tillage practices led to the widespread adoption of these practices by farmers.

The results of substation work in this district, over a period of seven years, have led to several modifications in cropping and tillage practices.

1. On very light sandy soils which drift readily, summer-fallowing has proved of little value in conserving soil moisture. Consequently, the control of soil drifting on such lands is effected most satisfactorily by maintaining continuous cover, either as permanent grass, or by seeding a crop each year.

2. On heavy soil it is sometimes considered questionable if strip farming is of much value except in very narrow strips. Such soils generally have a heavy stubble with which to maintain a trash cover which renders strip farming unnecessary. When they do start to drift, the maximum drifting point is reached in such a short space that as much soil would probably be moved from strips of ordinary widths as from large fields. In this case, emergency control measures, such as listing and spreading straw, must be resorted to, and these methods are applicable to large as well as small fields.

3. Loam soils are the least subject to drifting, since they tend to hold a cloddy condition. It is on these soils that strip farming, combined with ploughless tillage, has its widest application.

Tillage methods used on substations in this district vary widely according to season and local conditions. The determining factors are the amount of stubble, the amount of weed growth, and to some extent, the soil type. Under conditions of heavy combine stubble only implements of the disc type can be effectively used, and in extremely heavy stubble the one-way disc is the only implement that will destroy weeds. The mouldboard plough might be used under heavy stubble conditions, but the high cost of operation limits its use in this district. Where trash is scanty the cultivator and rod weeder are used.

Spring treatment of fallow previous to seeding has been largely confined to the use of the disc harrow or duck-foot cultivator, while seeding has been done with the double disc drill. In recent years excellent results have been secured with the newer types of one-way disc seeders, especially where heavy trash prevents full penetration of the ordinary drills. Packing with a subsurface packer after seeding has proved essential for best results with the one-way seeder.

Northwestern Saskatchewan and East Central Alberta - On substations in this district, supervised from Scott, strip farming is practised, but more reliance is placed on proper tillage methods for

the control of soil drifting. The method of summerfallow tillage is governed largely by the amount of trash available and by soil type. On clay soil at Loverna and on sandy soil at Metiskow, ploughless tillage is practised when trash is adequate, but ploughing is preferred when trash is scanty. Ploughless tillage has been found satisfactory at Kindersley, while ploughing is practised more generally at Consort. For ploughless tillage, the one-way disc and the cultivator are in general use. A growing practice is to seed sandy knolls to permanent grass.

North Central Saskatchewan - Strip farming, with strips not more than twenty rods in width, has been found advantageous in the control of soil drifting on the substations which are supervised from Melfort. As regards tillage practices for the control of soil drifting on fallow land, it has been found that the soil on each substation in this district requires different treatment. At Rosetown ploughing has been as effective as ploughless tillage, except when heavy rains break down the lumpy surface. At Juniata ploughing has been preferable to ploughless tillage, while the reverse has been true at Guernsey. For ploughless tillage on these substations, the one-way disc has tended to cause drifting, the cultivator being more suitable for this purpose.

Among farmers in this district there is a growing tendency to follow the cropping and tillage practices which have proved satisfactory on the local substations.

Southern Alberta - Throughout the district served by substations under supervision from Lethbridge, severe soil drifting has been experienced in the past. On all substations, however, soil drifting control has been effected by strip farming and the maintenance of trash cover on the fallow strips. The strips vary in width from 10 to 20 rods, depending on the type of soil and the velocity of winds usually experienced. Narrow strips from 10 to 13 1/3 rods wide are used on fine sandy loam and heavy clay soils, while widths of from 16 to 20 rods are satisfactory on medium textured soils. In the extreme south the best direction of stripping is north and south, but farther north the direction of strips may be decided by convenience in field work.

Implements commonly used in summer-fallow tillage are the one-way disc, cultivator and rod weeder. In recent years, satisfactory crops have been grown at all substations with the result that a heavy stubble has facilitated the control of drifting. Ploughing summer-fallow land is now considered an "emergency" method of controlling soil drifting. The only ploughing on any substation in 1941 was done on an area at Nobleford which was not well protected by trash cover.

At Claresholm all summer-fallow strips are seeded about the beginning of August to cover crops of oats. This practice is followed to a limited extent at Pincher Creek.

Central Alberta - There are three substations supervised from Lacombe and these are located at Castor, Drumheller and Rocky Ford. Strip farming with a good trash cover has proved entirely effective in controlling soil drifting on these substations, and these practices have been widely adopted by farmers in the district. The width of the strip varies from 16 to 20 rods.

ECONOMIC RESEARCH UNDER THE P.F.R.A.
IN SASKATCHEWAN AND ALBERTA

Economic research projects were continued in Saskatchewan and Alberta during the fiscal year 1941-42. In Saskatchewan, two projects were designed to provide additional data for the extension of land use classification, which had been the chief activity of this field during the previous six years. The third project was designed to measure the progress of settlers in the newer areas of Northern Saskatchewan.

In regard to the land classification projects, the first of these was carried on in the Weyburn-Alameda area in the south-eastern part of the Province. In this study, approximately 550 farmers co-operated in providing information relating to the relative opportunities for income on the various grades of land occurring within the area. Of these farmers, 268 provided detailed farm business statements for the year ending April 30th, 1941. A tentative land classification covering nine municipal units in this area was completed. In these nine municipal units, five land classes were distinguished. The second project bearing on land classification was carried on in the Blucher-Colonsay district which is located south and east of Saskatoon, and is typical of a good deal of the prairie area in central Saskatchewan. In this study, 250 farmers co-operated, 146 providing detailed statements on their 1940-41 business. A tentative classification of the land in this area has been prepared. This area is near the transitional belt where grain farming merges into a more diversified type of agriculture and the information obtained in this study is considered to be particularly valuable from a research point of view in providing a modification of basis of classification prior to its extension to more diversified areas in the province.

Land Settlement - A study of land settlement in the Albertville-Garrick area north and east of Prince Albert was conducted during the summer of 1941. The purpose of this study is to measure the financial progress of settlers and to determine insofar as possible the factors responsible for the degree of success attained. With this information available, reliable guides to settlement policies in woodland areas may be set up.

The fourth project carried forward in Saskatchewan was that of a study of land tenure. The field work on this project is completed and the analysis is proceeding under the general direction of Professor H. Van Vliet of the University of Saskatchewan. This project is expected to yield very useful information related to the whole problem of land holding in Saskatchewan.

Publications in reference to land classification in Saskatchewan issued during the year were "An Economic Classification of Land in Fifty-six Municipal Units in South Central Saskatchewan" which is technical bulletin No. 36, and a mimeograph report entitled "An Economic Classification of Land and Its Relation to Farm Income in the Eyebrow-Lacadena Area 1939-40".

In addition to the foregoing studies, in co-operation with the Department of Farm Management, University of Saskatchewan, a study of changes in farm income and indebtedness was undertaken. This publication is to be issued by the University of Saskatchewan.

In general, it may be stated that the scope of activities in this field have been curtailed during the year because of the number of members of the staff who joined the active service forces.

In Alberta, a study of irrigation farming was begun in 1940 and continued during the summer of 1941. Some additional information was obtained in the Rolling Hills area of the Eastern

Irrigation District and a substantial number of records of farmers engaged in the production of livestock on lands which are partially irrigated were also attained. An extension of this study was arranged in order to provide some additional information for the committee investigating the advisability of the St. Mary and Milk Rivers Irrigation Project. During the year additional work was done in connection with the classification of land in five municipal districts in the southwest corner of the province. The checking of the preliminary classification was completed and the preparation of the final maps is now underway. In addition to the work of land classification and irrigation farming, a study of land settlement was undertaken in the Winfield-Sangudo area, south and west of Edmonton. This study was conducted along the same lines as that carried on in northern Saskatchewan, and with similar objectives. The field work in connection with the study of ranch management problems was completed during the summer and fall of 1941 and the analysis of data collected over the three year period was advanced at a reasonably satisfactory rate. Changes in staff have created difficulties in all of these studies.

In Alberta, a bulletin entitled "Land Use Classification in the Special Areas of Alberta and in Rosenheim and Acadia Valley" was published during the year. With publication of the bulletins covering fifty-six municipal units in Saskatchewan and the Special Areas of Alberta, tangible evidence of the usefulness of land use classification studies have been presented to the public.

PRairie Farm Rehabilitation Act

EXPENDITURES BY ACTIVITIES

ADMINISTRATION

April 1, 1941

March 31, 1941

April 1, 1941

March 31, 1942

Total

A-1 Administration, Ottawa
A-2 Administration, Regina
A-3 Advisory Committees
A-4 Aerial Surveys
A-5 Economic Surveys
A-6 Entomological Surveys
A-7 Educational Motion Pictures

386,545.39

99,783.48

486,328.87

CULTURAL EXPERIMENTS & RESEARCH

B-1 Cultural Publications and

Administration
and Reclamation Stations

B-3 Grass Investigations, Seeding and
Coverage & Range Surveys

B-4 Tree Planting

B-5 Soils Surveys and Research

B-6 Agricultural Improvement Associations,
Agricultural Extension Work

B-7 Cultural Work on Irrigation Projects

B-8 Livestock Surveys and Sheep
Development

B-9 Rust Resistant wheat and Pure Seed
Grain Centres

293,735.02

804,967.92

256,368.21

214,012.59

310,807.96

56,743.50

305,618.85

943,223.39

41,386.13

32,715.44

297,754.34

246,728.03

367,551.46

11,833.83

305,618.85

17,744.53

43,446.95

13,810.04

352,629.35

31,554.57

10,453.40

36,741.74

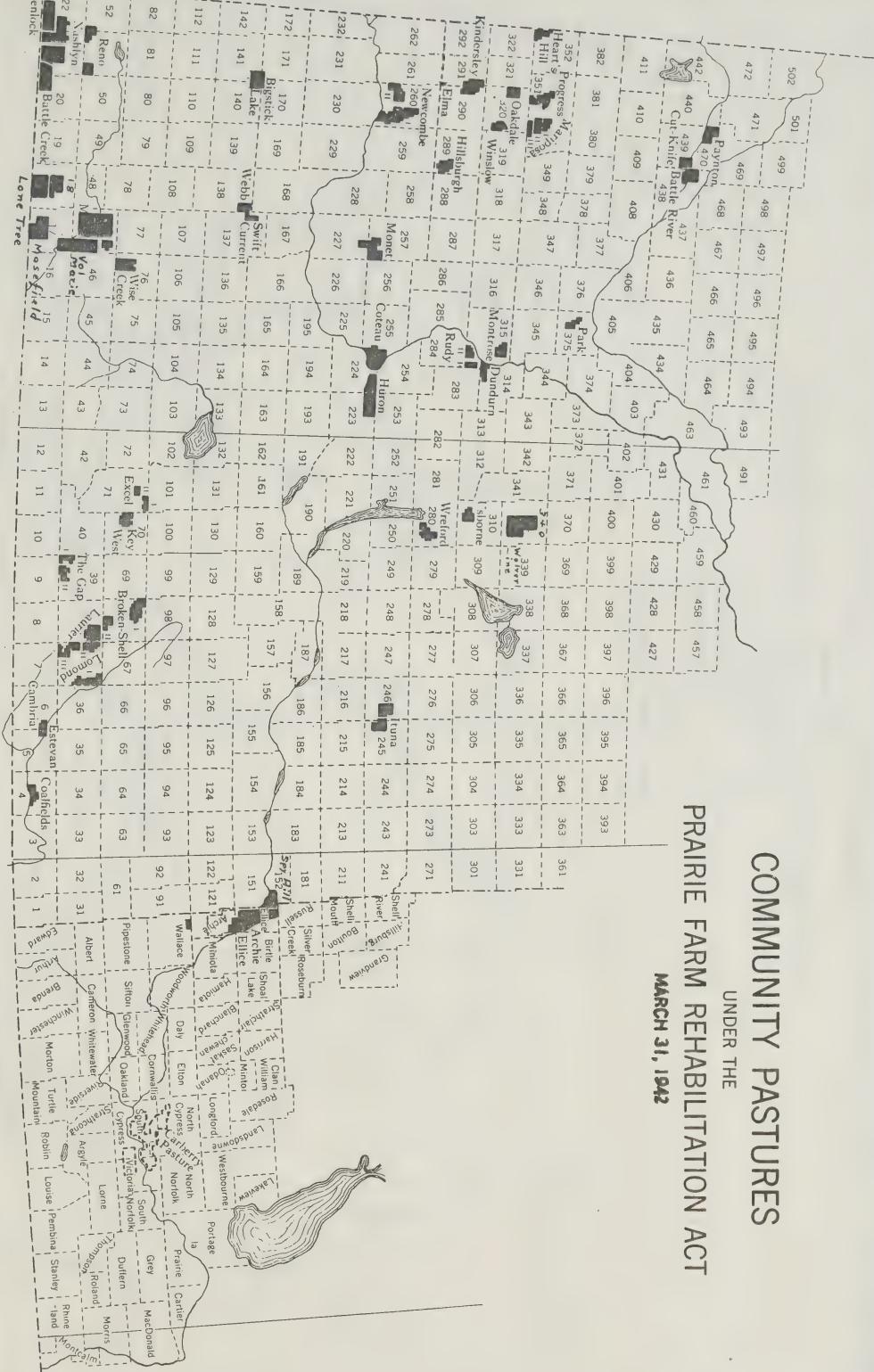
332,793.33

332,793.33

COMMUNITY PASTURES

UNDER THE

PRAIRIE FARM REHABILITATION ACT



LARGE WATER DEVELOPMENT PROJECTS UNDER THE

PRAIRIE FARM REHABILITATION ACT

To End of March, 1942

LEGEND
Large Projects.....
Miscellaneous Projects.....

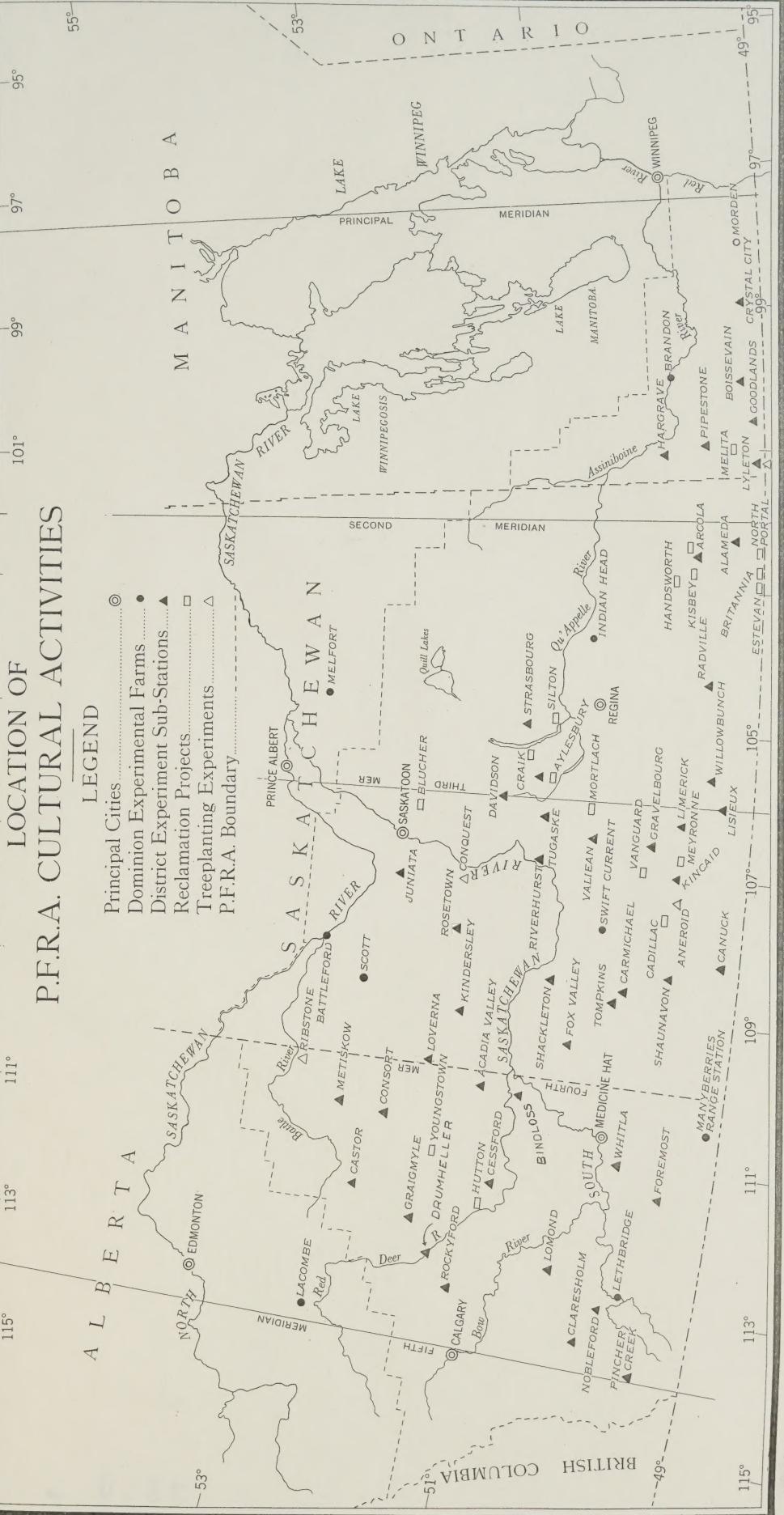
SCALE
50 25 0 25 50 75 100
kilometres



P.F.R.A. CULTURAL ACTIVITIES

LEGEND

- Principal Cities
- Dominion Experimental Farms
- ▲ District Experiment Sub-Stations
- Reclamation Projects
- △ Treeplanting Experiments
- △ P.F.R.A. Boundary



3 1761 115533911